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Cross-Cohort Changes in the Returns to Schooling and Early Work Experiences: Consequences on the Gender Wage Differential *

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Abstract

This study examines how the returns to wages of early work and schooling experiences changed for young men and women in the United States over the latter half of the twentieth century. Our analysis focuses on the experiences of young men and women from two different birth cohorts—one group that was of high school age during the second half of the 1960s and a second that grew to young adulthood in the late 1970s and early 1980s. We pay particular attention to how the differences across cohorts in human capital accumulation vary by gender and how these differences affected their subsequent wage attainment. We present an econometric framework to consistently estimate the returns to youth's schooling and early work experiences. This framework attempts to deal with both the endogeneity of schooling and various types of work experiences and selection bias in our wage data. Using these estimates, we adapt the Juhn, Murphy, Pierce (1993) wage decomposition framework to assess separately the roles of across-cohort changes in the observed and unobserved skill distributions and of changes over time in the returns to these skills, towards explaining the convergence of the gender wage gap.

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1. Introduction

In this paper, we examine the effect of schooling and of various types of work experiences, acquired by young men and young women in the U.S. during the 1960s, 1970s, and 1980s, on their subsequent wage attainment. Our analysis focuses on the experiences of young men and women from two different birth cohorts—one group that came to young adulthood during the second half of the 1960s and a second during the late 1970s and early 1980s. While separated by little more than ten years, these two birth cohorts experienced notably different labor markets conditions and circumstances as each grew to young adulthood. Over this period, the U.S. saw several important changes in the structure of its labor markets. We briefly summarize some of these changes.

Beginning in the mid 1970s, the U.S. (as well as other countries) experienced a dramatic increase in income inequality as its distribution of wages changed in several ways.[1] Wage differentials by education (especially between college graduates and those with less education) occupation, age and work experience all increased. Wage dispersion also increased within demographic and skill groups. These changes in the U.S. labor market gave rise to increased inequality in household income and consumption.[2] These changes in the 1980s were preceded by a narrowing of the educational wage differentials that had no noticeable effect on wage, or income, inequality that had occurred in the late 1960s and 1970s.[3]

A vast literature has emerged which has tried to explain this increased inequality in terms of changes in the supply and demand for skills in the U.S. labor market and in labor market insti-

[1] See, for example, Bound and Johnson (1992), Katz and Murphy (1992), Levy and Murnane (1992) and Buchinsky (1994). Katz and Autor (1999) provide a careful documentation of what changed and survey the literature that has emerged to explain them.

[2] See Cutler and Katz (1992).

[3] See Katz and Murphy (1992) and Katz and Autor (1999) for more on what happened with respect to educational and experience differentials and wage inequality over the last forty years of the twentieth century in the U.S.

tutions (e.g., unions) and regulations (e.g., minimum wage) over this period. The consensus from this body of work seems to be that an increased demand for more-skilled workers—likely spawned by skill-biased technological change—and a slowdown in the relative supply of college workers accounted for the sharp rise in the college wage premium and the increase in the within education/experience group wage inequality of the 1980s.[4] Over this same period, studies have found that the erosion of unions and the minimum wage to inflation failed to protect the wages of less-skilled workers, exacerbating the skill differentials in wages.[5]

Starting in the 1970s and 1980s, two other important changes occurred in the composition of the U.S. labor force. One was the increasing role of women in the U.S. labor force and the relative improvement in their wages. From 1965 to 1985, women's labor force participation rates went from 38.7 to 44.1 and women went from 34.9% to 44.1% of the civilian labor force. While these changes were part of a long-run trend that played out over all of the twentieth century, the rates of increases in both women's participation rates and their share of the labor force over the period 1965-1985 were unprecedented, especially over the latter half of the twentieth century. With respect to women's earnings, the ratio of women's to men's weekly wage earnings was 0.562 in 1969; by 1989, this same ratio had improved to 0.682,[6] with the improvement in gender differentials in wages concentrated in the post-1979 period after almost 20 years of little or no change. The convergence of the gender wage gap occurred alongside increased wage inequality within gender.[7]

These changes to the U.S. labor market clearly altered the context in which the young men and women in two sets of birth cohorts drawn from the National Longitudinal Surveys

[4] See Bound and Johnson (1992) and Katz and Murphy (1992).

[5] See DiNardo, Fortin and Lemieux (1996).

[6] See Blau (1998).

[7] See Figure 1 in Mulligan and Rubinstein (2004, 2005).

(NLS) grew to young adulthood. Moreover, it is entirely possible that there were changes in the "composition" of young adults across these cohorts, i.e., their skill- and job-related attributes changed. In Bacolod and Hotz (forthcoming), we examine the same data used in this paper, namely that for young men in the National Longitudinal Survey of Young Men (NLS-YM) that was begun in 1966, young women in the National Longitudinal Survey of Young Women (NLS-YW) that was begun in 1968 and the young men and women in the National Longitudinal Survey of Youth, 1979 (NLSY79) that was begun in 1979. In our earlier paper, we document important changes in the nature of the school-to-work transition across these NLS cohorts. In particular, we find that the amounts of schooling and early work experience increased across cohorts, particularly for young women.

In this paper, we assess the effect of this across-cohort change in accumulated schooling and of various types of work experiences, on their subsequent wage attainment and the gender wage gap. We present an econometric framework that accounts for both selection bias in the wage data and the potential endogeneity of the timing and accumulation of schooling and early work experiences of young men and women. Structural changes in the U.S. labor market over this period suggest youth may be responding to changing incentives and conditions in the labor market. We investigate whether the rise in the returns to skills—be they in the form of higher education or work experience—caused the cohorts of women becoming adults in the 1980s to spend more time in school and acquire more work experience as teens and young adults.[8]

More specifically, we present an econometric framework to consistently estimate the returns to youth's early schooling and work experiences, and determine the extent to which these returns varied across cohorts of young men and women. Using these estimates, we assess the contribution of the following to the narrowing of the gender wage gap: changes in the skill com-

[8] Heckman, Lochner and Taber (1998) do estimate a dynamic general equilibrium model in which the human capital investment decisions of youth respond to the relative returns to these investments.

position of men and women across these cohorts—that is, in terms of both their observable and unobservable skills—and to changes in the returns to these observable and unobservable skills. This final assessment is based on the application of an adapted version of the wage decomposition framework proposed by Juhn, Murphy and Pierce (1993). Previous gender gap wage decompositions were based on ordinary least squares (OLS) estimates of wage equations that ignored both the potential endogeneity of accumulated work and schooling experiences and selection bias associated with analyzing wage data.[9]

While an extensive literature documents and attempts to explain differential labor market outcomes in employment and wages by gender, almost all previous studies also begin their analysis for respondents aged 25 (e.g., studies surveyed in Altonji and Blank 1999). As we will discuss further below, a substantial share of young men and women actually accumulate significant amounts of work experience before age 25, whether the experience was while in or out of school. Failing to account for early experiences in explaining labor market outcomes is actually nontrivial. For instance, Light (2001) finds that failing to control for in-school work experience overstates the return to schooling in wage regressions for men in the NLSY79.

Furthermore, our use of more complete measures of actual (as opposed to potential) experience is likely to be important for women. Potential experience, which is what a large number of studies using Census data end up measuring, is likely to overstate actual experience for women because of the amount of time they spend out of the work force. Filer (1993) shows that the amount that potential experience overstates actual experience systematically varies with characteristics such as race and education, and this would lead to biased estimates of coefficients

[9] See for instance, Blau and Kahn (1997). While there are studies that control for self-selection in women's decisions to work over time (e.g., Mulligan and Rubinstein 2004, 2005), we are not aware of one that has attempted to deal with both endogeneity and selection.

in female wage equations.[10]

In the remainder of this paper, we describe our data sources with particular attention to ensuring the comparability of work and schooling histories and on background characteristics. We proceed in Section 3 with a statistical portrayal across cohorts of young men and women's schooling, various types of work experiences, wage attainment, and background characteristics. We present our empirical framework in Section 4. We also use this framework to assess the relative impact of differences in family background, initial skills, college costs, and local labor market conditions on cross-cohort differences in schooling and work experience accumulation. Finally we discuss how we use our parameter estimates to perform a decomposition of the gender wage gap.

2. Data

Our data come from three longitudinal surveys: the National Longitudinal Surveys of Young Men (NLS-YM) and Young Women (NLS-YW) that began surveying youth in the mid to late 1960s and the NLSY79 that began interviewing young men and women in 1979.

The National Longitudinal Surveys of Young Men (NLS-YM) and Young Women (NLS-YW) are two of the NLS Original Cohorts, nationally representative surveys conducted by the U.S. Bureau of the Census Demographic Surveys Division that began in the mid-1960s and were followed over time. The NLS-YM respondents, young men aged 14 to 24 as of April 1, 1966, were initially interviewed in 1966, and participated in 12 follow-up surveys until 1981.[11] Of the initial 5,225 young male respondents, 3,695 (70.72%) were still participating in the surveys 10 years later. The NLS-YW began in 1968 and follows a cohort of young women aged 14 to 24 as

[10] He uses data from the NLS Young Women, Mature Women and Youth 1979.

[11] More specifically, follow-up interviews were conducted annually up to 1971, and the subsequent interviews were in 1973, 1975, 1976, 1978, 1980, and 1981.

of December 31, 1967. This cohort completed 19 interviews between 1968 and 1999.[12] As of ten years after the initial survey, 3,902 respondents (75.63%) of the original 5,159 women were still participating in the surveys. Until the mid-1980s, the Census Bureau had a policy of excluding from continued interviewing respondents in either of these surveys who refused to be interviewed or were non-interviews for any reason for two consecutive years. To account for this attrition as well as the overrepresentation of blacks in the initial samples, we make use of the recalculated sampling weights provided by the Surveys with each subsequent interview. Furthermore, since the focus of the analyses in this study is the early careers of these youths, the problem with attrition is minimized.[13]

Our data for youth that entered adulthood during the 1980s come from the NLSY79, which follows a sample of young men and women aged 14 to 21 as of December 31, 1978. NLSY79 respondents were initially interviewed in 1979 and interviewed annually in subsequent years. In contrast to the Original Cohorts, the NLSY79 exhibits a low attrition rate of just over 10% of the original sample by 1990. Three subsamples comprise the NLSY79: a cross-sectional nationally-representative sample; supplemental samples designed to oversample Hispanics, blacks, and economically disadvantaged youths; and a military sample. The respondents in this study include all these samples except the military oversamples.[14] Including these oversamples adds to our potential for drawing reliable inferences for the black and Hispanic subgroups.

Longitudinal interviews in the NLS-YM, NLS-YW, and NLSY79 collected detailed information on the respondent's schooling, work, and military experiences, including start and end

[12] Follow-up interviews were conducted annually up to 1973, and subsequently in 1975, 1977, 1978, 1980, 1982, 1983, 1985, 1988, 1991, 1993, 1995, 1997, and 1999.

[13] Analyses by Rhoton (1984) of selected characteristics of respondents in the 10th year samples in each of these cohorts indicate that attrition was not so selective, and that the reweighting scheme allowed the samples to remain representative. A later analysis by Zagorsky and Rhoton (1998) finds that respondents with lower income and educational attainment as well as blacks attrit at higher rates.

[14] Not including the military oversamples effectively excludes only one observation in the relevant age sample we examine. Our sample selection criteria are discussed further below and tabulated in the Data Appendix.

dates, hours worked and wage rates in various jobs held. While the types and extent of information across these surveys are not uniform, we made an effort to maintain comparable definitions of our variables of interest. For instance, Hispanics in the NLSY79 are directly identified while in the NLS-YM and NLS-YW there is no such direct information. To identify Hispanics in the NLS-YM and NLS-YW, we used respondents' responses to parent's and grandparent's birthplace. The NLS-YM and NLS-YW respondents were classified as Hispanic if they report at least one parent or grandparents' birthplace to be a Latin American country. For comparability, we used the same definition to code NLSY79 respondents as Hispanic origin. To ensure we have a representative sample using this definition, after applying weights we compared our analysis samples with data from various U.S. Censuses. Hispanics comprise 4.5% of the U.S. population in the 1970 Census, while Hispanics as defined above are 4.59% of our NLS-YM and NLS-YW samples and 4.22% of our NLSY79 analysis sample.

We also examined the extent to which the dimensions of the human capital acquisition and wages for the youth that we analyze and compare across cohorts are affected by how a respondent's ethnicity, namely whether or not they are classified as being a Hispanic, is defined. By and large, our results are not very sensitive to how Hispanics are defined for the NLSY79 data, although the gaps between Hispanics and Whites in various measures of human capital accumulation tend to be understated using our parent/grandparent place of birth method of classifying Hispanics versus the self- and interview-identified classification provided in the NLSY79 data. As a result, the cross-cohort differences we present below, if anything, *understate* the changes across cohort in the various measures of human capital accumulation for Hispanic youth.[15]

[15] See the Data Appendix for more discussion of the various analyses we performed regarding the sensitivity of our classification scheme of Hispanics. A relatively large literature in sociology deals with the difficulties in identifying Hispanics in survey data. For instance, some surveys base Hispanic classification on screener observation, or His-

While we do not find particular sensitivity in the method we use to determine whether individual respondents are Hispanic, we do have reason to believe that the composition of Hispanics changed across cohorts in some notable ways. First, consistent with the increased rate of immigration into the U.S. that started in the 1970s, a much higher fraction of Hispanic respondents were foreign-born in the NLSY79 (42.9% of men and 38.0% of women) relative to Hispanic respondents in the NLS-YM (7.3%) and NLS-YW (2.5%). Furthermore, we suspect that there was a marked change across the cohorts in the country or region of ancestry among Hispanics. The immigration wave that began in the 1970s and 1980s was disproportionately from Mexico. This same change appears to have played out across the cohorts we analyze. Among the Hispanic respondents in the NLSY79 that were foreign-born, 56.7% of men and 57.1% of women were born in Mexico. We suspect that this represents a substantial increase in the fraction of Hispanics that were from Mexico relative to the NLS-YM and NLS-YW cohorts, although we cannot verify this fact because information on the particular country for foreign-born respondents is not available for either of these original NLS cohorts. We call attention to these changes in the Hispanic subgroup since both—higher proportions of immigrants and immigrants from Mexico—appear to account for some of the across-cohort differences in the skill acquisition among Hispanics that we document below.

We also attempted to develop comparable measures of a respondent's ability, or skill, as measured by aptitude/achievement tests across the three NLS surveys. In the case of the NLS-YM and NLS-YW respondents, a special school survey was mailed directly to each school that they attended and the schools were asked to record test scores from the individual respondents' transcripts for such assessment instrument as the Otis/Beta/Gamma, California Test of Mental

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panic-sounding last name, or ancestral place of origin, or respondent self-reports. There are clearly issues with each of these different methods. The strength of our classification scheme is that it allows us to be consistent across cohorts. This then allows us to do the best possible given the data and be able to say something about this group given the large changes in immigration and immigrant quality over the period under study.

Maturity, Lorge-Thorndike Intelligence and SAT. An IQ test score was created from these data and is available for over 3,300 of young men and 3,300 of young women respondents.[16] In the case of the NLSY79, respondents were administered the Armed Forces Qualifying Test (AFQT). In an effort to make these measures comparable as possible, we converted the IQ test scores of the NLS-YM and NLS-YW respondents to percentile scores, making this conversion before selecting our analysis sample.[17] Percentile scores for AFQT test results of the NLSY79 respondents were available in the public release version of these data.[18]

In what follows, we restrict our analysis to those respondents who were between the ages of 14 and 17 in the baseline interview year—that is, to respondents who were 13 to 16 in 1965 in the NLS-YM, 13 to 16 in 1967 in the NLS-YW, and 13 to 16 in 1978 in the NLSY79. We then followed each of these respondents year-by-year until they reached age 28 or attrited from the survey. This restriction was made to ensure that we collected prospective information and as complete information as possible on all early employment experiences for these youth. While an attempt to gather retrospective information on activities was made in the baseline interviews across these surveys, this data is inevitably incomplete for the older cohorts. (See the Data Appendix for the number of observations in our analysis sample given these selection criteria.)

One of the goals of our study is to characterize young men and women's accumulation of

[16] See the Codebook Supplement Appendices to these two surveys for a discussion of how these scores were created.

[17] We did this by first computing the percentiles of the IQ score distribution among Young Men, and then categorizing male respondent's non-missing raw scores into these percentiles. We then performed the same exercise for the Young Women with non-missing scores separately. While the conversion method of the component tests for the IQ score seems to be psychometrically sound, a substantial number of the youth in our sample actually have missing test scores. This is because our sample includes the youngest men and women who by 1968 had not yet taken tests such as the SAT and other tests usually taken towards the end of high school.

[18] In their study of black-white differences in ability, Neal and Johnson (1996) find that schooling is a significant contributor to the AFQT score for the NLSY79 respondents. Accordingly, in their analysis they use a regression-adjusted version of the AFQT in their assessments. In what follows, we present results based on unadjusted IQ/AFQT percentile scores (see Table 3). While not reported here, we also redid all of the analyses presented below that involved IQ/AFQT scores, using regression-adjusted IQ/AFQT test scores comparable to those in Neal and Johnson. None of the conclusions drawn with respect to differences across cohorts was sensitive to which version of the IQ/AFQT scores we used.

work, schooling and military experiences across these cohorts. Towards this end, we constructed a year-by-year classification of each respondent's primary activity at each age, from 13 to 28. A more detailed discussion of this construction can be found in the Data Appendix. Using information from the schooling attendance and work history portions and other items in each annual survey, we classified respondents into one of the following six, mutually exclusive, activities:

(1) School Only;

(2) School and Part-Time Work;[19]

(3) Part-Time Work (and no School);

(4) Full-Time Work;

(5) Enlisted in Military; and

(6) Other (Non-School, Non-Work) Activities.[20]

In assigning each person-age an activity, we first determined if this person was enlisted in the military during the calendar year at each age; if so, we classified him as engaged in activity (5). We then examined schooling attendance, months, weeks, and hours worked in the calendar year at each age. Work histories in the NLS-YM and NLS-YW are not available in as detailed and comprehensive a form as those provided in the NLSY79. For instance, the NLSY79 reports hours worked week-by-week over the calendar year. While we could construct a similar week-by-week work history in the NLS-YM and NLS-YW using the dates of jobs held, to minimize measurement error we create monthly work histories to generate annualized measures. We determined whether or not a youth in the NLS-YM, NLS-YW, and NLSY79 worked in that month, and if so, his or her average hours worked and hourly wages earned in that month.

[19] This label may not be completely accurate in that some forms of working while in school can be full-time work. We discuss some efforts at separately identifying this in the Data Appendix.

[20] Even though the NLS-YM and NLS-YW were not always conducted on an annual basis (see footnotes above), we can derive respondents' activity for the intervening year using responses to "intervening year" questions as well as start and end dates of schooling, work, and military activities.

Full-time employment (activity 4) was assigned to a youth who, at that age: (i) was not engaged in school and worked at least 35 hours per week on average, and (ii) worked in each of the 11 months in that calendar year. A youth was classified in part-time employment (activity 3) if, at that age, he or she: (i) was not enrolled in school and worked less than 35 hours per week on average, and/or (ii) worked in any of the 11 months in that calendar year.

Youth who reported attending school during the year were then assigned to activity (1) or (2), depending on whether they reported doing any work during the year. Finally, a respondent not assigned to any one of the first five activities was assigned to activity (6).

In constructing our data this way, we utilize the richness available in these three longitudinal surveys to characterize a youth's various activities and human capital accumulation. Our design of measuring a youth's actual experience at each age allows us to illustrate the timing as well as the extent of accumulated schooling, work, military and other experiences at each age. Comparable definitions also allow us to contrast the quantity and timing of human capital accumulation across cohorts of men and women.

In addition to the information on activities, associated wages, personal characteristics, family background and test scores, we also gathered from the various NLS surveys measures of local labor market conditions in the residence of each of our respondents in each year they were interviewed. In particular, we use two measures that were commonly provided across the three surveys: the unemployment rate in the area and the size of the local labor force.[21]

Finally, we merged in information on the costs of higher education schooling by using

[21] A "local labor market" in the NLSYM and NLSYW is defined as the primary sampling unit of the survey. This geographical sampling area could encompass one or more contiguous counties or a statistical metropolitan area. Unemployment rates and size of labor force series in the NLSYM and NLSYW were calculated from varying years of the Current Population Surveys. The local labor market conditions in the NLSY79 come from the GEOCODE version of the NLSY79. The local labor market area refers to the respondents' metropolitan area of residence. If the respondent lives outside a metropolitan area, the unemployment rate is the computed balance of state unemployment rate from the state in which the respondent resides.

the region in which the respondent resided at the time of the baseline or initial interview.[22] In particular, using the Higher Education General Information Survey (HEGIS, 1969-74, 1976, 1980, 1984-85) and the Integrated Postsecondary Education Data (IPEDS, 1986-90), we constructed enrollment-weighted averages of tuition per student across colleges in the region.

Our strategy of classifying youth's various activities as of each age then allows us to not only document the extent and diversity of actual experiences youth accumulate, but also how these vary by race and gender and across cohorts. Given the mix of changes and persistence in racial and gender gaps in labor market outcomes over time, it is important to examine differences in the acquisition of early work experiences of females and minorities across these cohorts.[23]

3. A Statistical Description of Young Men and Women Across Cohorts

In this section, we provide a statistical description of the early labor market skill acquisition of youth across cohorts. We focus our discussion on the differences across gender and race/ethnicity. We also briefly examine differences in initial skills and in family background characteristics of youth across cohorts. We also present changes in the conditions under which the two youth cohorts reached adulthood, in particular, differences in local labor demand conditions and in the costs of college. Finally, we describe the wage outcomes of young men and women as a prelude to the econometric investigation in the subsequent section.

3.1 Patterns of Human Capital Accumulation Across Youth Cohorts

We begin by examining the distribution of schooling, work, military and other activities by age for the two sets of cohorts and how these distributions differed by gender, race and eth-

[22] Unlike the NLSY79, geocode information is not as accessible for the NLSYM and NLSYW cohorts. Region of residence is the only geographic variable available for these respondents to match on. One could obtain access to respondents' state of residence by applying to use the data at a Census Regional Data Center.

[23] Altonji and Blank (1999) note that: although the black/white wage gap narrowed in the 1960s and early 1970s, this gap has stagnated; the black/white female wage gap has risen in the past 15 years; the Hispanic/white wage gap has also risen for both males and females over this period; and the gender wage gap narrowed beginning in the late 1970s.

nicity. The distributions by age of the six activities noted in the previous section are presented in Table 1.

Examining any of the Panels for a particular gender and birth cohort, one finds the typical pattern of a progression from adolescents engaged almost exclusively in going to school to an increasing mixing of work-related activities. For example, among young men in the 1966 NLS-YM cohorts (Panel A of Table 1), 80% of whites, 85% of blacks and 87% of Hispanics were engaged exclusively in attending school at age 13, with much smaller percentages found to combine some part-time work and attending school.[24] As the respondents age, increasing percentages of them combine school and part-time work and/or stop attending school, begin to work on a full-time or part-time basis or, finally, enter the military. By the time the typical respondent reaches age 27, the vast majority of young adults are no longer attending school, either full-time or in combination with part-time work.

In Table 2, we present the cumulative schooling, work, military and other experiences for young men and women and how these patterns vary across cohorts. The table presents both the fraction of the sample that had that experience by age 27, as well as the mean number of years of various schooling, work, military, and non-work, non-school experiences by age 27.

We start with examining how the schooling experiences varied across the cohorts we analyze. Acquiring more education through schooling and the completion of high school and college degrees is generally thought to be the most effective way of increasing one's human capital. With respect to high school and college graduation rates and the fraction who attended college, we find that for all men, all three of these measures of educational attainment declined by 4%, 18% and 26%, respectively, across our two cohorts. With respect to young white men, high

[24] As noted above, our scheme for classifying activities is structured so that respondents at each age are assigned to a mutually exclusive activity during the calendar year they are that age. We note that the "Attending School & Working Part-Time" activity category in Table 1 includes respondents who work during the school year and those that attend school during the academic year and then work during the summer.

school and college graduation rates decline by 4% and 12% respectively and college attendance declines by 23%. Among black men, high school graduation actually increased by 10% across the cohorts we examine, although both college graduation and college attendance rates declined (by 16% and 26%, respectively). The declines in these same three indicators of educational attainment were markedly greater for Hispanic men, however. High school and college graduation rates declined by 17% and 53%, respectively, and college attendance fell by 47%. With respect to the highest grade completed by age 27, while white men show a small decline and black men post hardly any change, educational attainment among Hispanic men declined by 1.65 grades/years. The decline for Hispanic men is a decline of 12% relative to the early cohorts drawn from the NLS-YM data. In short, there was deterioration in educational attainment among young men, especially Hispanics, between young men entering adulthood during the late 1960s and those who entered adulthood in the early 1980s.

The more marked deterioration in educational attainment among Hispanic men could be due to the increase in fraction of Hispanics that are foreign-born that we have already noted. As is well documented, recent Hispanic immigrants (disproportionately from Mexico) tend to have lower levels of educational attainment than natives and this is especially true for the Hispanic immigrants that came to the U.S. starting in the early 1970s.[25] While this influx of less-educated immigrants accounts for some of the deterioration in educational attainment across our cohorts, we note that it does not fully account for it. In particular, we do not find evidence that the same across-cohort deterioration occurs among Hispanic women, even though we see no difference by gender in the fraction foreign-born across cohorts. In particular, the more recent cohorts of Hispanic women actually have 1.27 more years of education than those in the earlier cohorts, and similar improvements occur with respect to high school and college graduation rates. This con-

[25] See Borjas (1985).

trast suggests that the deterioration in the educational attainment of young Hispanic men across the cohorts we analyze occurred among both the foreign- and native-born. This finding is consistent with other studies of Hispanics (Smith 2001 and Duncan, Hotz and Trejo, 2004), which find that the educational attainment of Hispanic men did not keep pace with that of their white (and black) counterparts over the last 30 years, while Hispanic women did show some relative improvement over the same period.

The contrast between the across-cohort progress in educational attainment between young men and young women could not be starker. Examining the indicators of educational attainment for young women in Table 2, the most striking overall pattern is the improvement of women across the two birth cohorts we examine. High school graduation rates increased by 7.6% among all women and the rate of college attendance went up by 10.8%. The highest grade completed by age 27 among all women also went up by 1.8%. Among women, improvements in educational attainment across cohorts were modest for whites but sizeable for blacks and Hispanics, especially for the latter group. Among Hispanic women, high school and college graduation rates increased across cohorts by 36% and 468%, respectively, while college attendance rates went up 88%. The highest grade completed by Hispanic women went up 1.27 grades, which is an 11% increase over those for women in the 1968 NLS-YM cohorts. Black women experienced slightly smaller increases in high school graduate and college attendance rates, having experienced a 0.63 increase in grades completed by age 27. In short, minority women showed substantial improvement in almost all indicators of educational attainment across these two sets of birth cohorts.

Another important change across the birth cohorts we analyze was the increase in the incidence and amount of working while in school by young men and women. Working while in school, especially while in high school or earlier grades, has been associated with both positive

and negative consequences.[26] Working while in grade school and high school is claimed by some to increase a youth's sense of responsibility, self-esteem and independence and to lead to higher earnings and less unemployment later in life. Other research finds that intensive amounts of work while in school is associated with higher rates of dropping out of school and various deviant behaviors. Working for pay while in school generates income that can be used to help support one's family, although most evidence suggests that such work is used to support a student's personal consumption and, for students working while in college, to help finance one's education.

As shown in the second panel of Table 2, young women experienced sizeable increases in both the incidence and number of years of working while in school prior to age 27. The fraction of all young women working while in school increased by 7 percentage points (a gain of 8%) and 1.5 years (a gain of 57.1%) across the two cohorts. Among women, there was a 9% increase in working while in high school and a 30% increase in working while attending college. On average, women in the 1979 NLS-Y cohorts worked 0.51 and 0.84 additional years during high school and college, respectively, than did women in the 1968 NLS-YW cohorts. The largest increases in years spent working while in high school were experienced by black and white women, followed by Hispanic women. In contrast, Hispanic women experienced the largest increases in years spent working at the college level (on average increasing by 2.56 years among those who attended college) followed by black and white women, respectively.

Among young men, the fraction working while in school declined slightly across cohorts (from 0.97 to 0.94), although the total number of years of working while in school between the ages of 13 and 27 increased by 0.21 years (a gain of 5%). As shown in Table 2, both the incidence and number of years that young men spent working while in high school and college increased across the cohorts we examine. In contrast to young women, the largest increases in

[26] See National Research Council and Institute of Medicine (1998).

years working while in high school are experienced by white and Hispanic men, followed by black young men, in that order. Of those who attended college, young black men also experienced the largest increases in working while in college. However, the gains by race and ethnicity in years and incidence of this form of work were less for men than for women.

We next consider the across-cohort changes in the incidence and accumulated years of non-school work by age 27. As noted in the previous section, we characterize these types of work experiences by whether a youth/young adult in a given year worked part-time (and did not attend school) or full time during that year. Among all men, both the incidence and number of years in part-time (non-school) work by age 27 declined as the incidence and number of years in full-time work increased across cohorts. More precisely, the fraction of young men who had spent at least one year working part time by age 27 declined by 8.9% while the fraction who had worked full time by age 27 increased by 10.9%. Looking across racial and ethnic groups among men, one finds that white men experienced the greatest gains and largest reductions in the incidence and years of full time and part-time work, respectively.

In contrast, young women tended to experience across-cohort gains in full time work that were larger than those experienced by young men. Among all women, the fraction having had a year of full time work by age 27 increased from 0.44 to 0.80 (for a 80.6% increase) and an increase of 2.1 years in full time work (for a 196% increase) across the cohorts we examine. White women experienced the largest absolute and percentage increase in full-time work across cohorts compared to either black or Hispanic women, although both of these latter groups experienced large increases relative to their male counterparts.

Finally, we examine the across-cohort trends in the accumulation of non-school, non-work experience for men and women. As is apparent from Table 2, the incidence of ever spending time as well as the number of years spent in this "other" set of activities declined markedly

for both men and women. Among all men, there was a 56.4% decrease in the fraction of men who ever spent a year in these other activities prior to age 27, while the corresponding reduction in years spent in these activities was 71.9%. This "other" category presumably includes unemployment spells. A relatively large literature has also examined the various factors to account for changes over time in the relative unemployment of young black versus white men. Apart from individual and family characteristics as well as economic factors that may account for male youth unemployment, this literature has highlighted criminal activity as another non-schooling, non-work youth activity.[27]

Meanwhile, among women, the absolute levels of reductions in incidence and especially years spent in "other" activities was much greater than for men. Across the cohorts we examine, all women spent an average of 3.5 fewer years in this set of other activities and the fraction engaged in them declined from 0.95 to 0.42. While not exclusively, the primary activities included in this other activity category for women are childbearing, childrearing and home production. Taken together with their increases in work and schooling experience and declines in fertility (not shown here), the reductions in the incidence and accumulated time spent in the latter activities by young women reflects the transformation of women in the U.S. from home to work careers over the latter quarter of the twentieth century that was noted in the Introduction.

The across-cohort changes in the extent of human capital accumulation documented in Table 2 represent a dramatic set of changes, especially for women and minorities. What consequences these changes have in terms of indicators of labor market outcomes are explored briefly in Section 3.3.

[27] Bound and Freeman (1992) and Grogger (1992) find that the black-white male youth employment differential can be attributed to whether a youth has a criminal record. Grogger also highlights how a criminal record can lead to persistence in youth non-employment.

3.2 Differences in Personal, Family Background Characteristics, Labor Market Conditions and College Costs Across Cohorts

Several forces potentially underlie the change in the patterns of youth skill acquisition documented above. In this section, we briefly examine changes across cohorts in the personal, family background characteristics, and conditions in the labor market of residence of our samples. On the one hand, differences in personal and family background characteristics across youth cohorts may have resulted in a change in the composition of youth cohorts, leading to the observed differences in their schooling and work decisions. On the other hand, local labor market conditions and the costs of attending college and staying in school may also affect such decisions.

In Table 3, we present descriptive statistics by gender, race and ethnicity for a set of personal and family background characteristics for the two sets of cohorts included in the three National Longitudinal Surveys we analyze in this paper. We begin by analyzing the differences across cohorts in the percentile scores for aptitude and intelligence tests available in the three surveys. Recall from Section 2 that different tests are used across the cohorts[28] and that they were normed in different ways.[29] Furthermore, as the incidence of missing scores displayed in Table 3 makes clear, we are missing IQ/AFQT raw scores for these tests for a much larger fraction of the respondents in the early cohorts compared to the later cohorts, a point noted in Section 2. For all of these reasons, one needs to be cautious in the inferences drawn for the across-cohort comparisons of these IQ/AFQT test scores.[30]

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[28] A composite set of tests obtained from a survey of respondent high schools was used for the NLS-YM and NLS-YM respondents and the Armed Forces Qualifying Test (AFQT) was used for the male and female respondents in the 1979 NLS-Y.

[29] The AFQT tests were normed and provided in the 1979 NLS-Y public release. As described in Section 2, we normed the scores for the NLS-YM and NLS-YW data.

[30] As recorded in Table 3, for both men and women and for all racial and ethnic subgroups, the percentile scores declined across cohorts. In our view, one must be cautious in taking this difference as an indicator that the quality of young men and women declined across these birth cohorts.

In an attempt to mitigate some of these problems, we analyze the distributions of tests scores for the various gender and racial/ethnic groups relative to different cohort-specific "standards."[31] The idea is not to make level comparisons but to compare how each group's relative positions at various points of the IQ/AFQT distributions changed across cohorts. The distributions of a set of "standardized" IQ/AFQT percentile scores are presented in Figures 1A through 1D. In Figures 1A and 1B, we subtract the scores at the 10^{th}, 30^{th}, 50^{th}, 70^{th}, and 90^{th} percentiles for each particular racial/ethnic, gender and birth-cohort group from the corresponding scores for all members of a particular gender and birth-cohort group. This provides us with one measure of how the *relative* positions of each racial/ethnic and gender group changed across cohorts. In Figures 1C and 1D, displays the results of another way of characterizing the across-cohort changes in relative positions of racial/ethnic and gender groups by comparing the same percentile scores for racial/ethnic, gender and birth-cohort groups with the cohort-specific percentile scores for white men.

The alternative ways of standardizing the IQ/AFQT scores presented in Figures 1A through 1D yield very similar conclusions with respect to how the relative "quality" of the various groups changed across cohorts. In particular, among white men and women, we find little change in their IQ/AFQT distributions across the two cohorts we analyze. In contrast, the IQ/AFQT distributions for both black men and women tend to improve across the cohorts, although the representation of blacks of either gender in the upper parts of the IQ/AFQT distributions does decline across the cohorts, especially among black women. Finally, among Hispanics, the cohort changes differ dramatically by gender. Among Hispanic women, by either method of standardization, their IQ/AFQT distributions unambiguously improve across cohorts (see Figures 1B and 1D). In contrast, the IQ/AFQT distributions of Hispanic men, again by either method of

[31] We note that the alternative standardizations presented in Figures 1A through 1D are still subject to the potential problem that the differences in the incidence of missing scores across cohorts biases the across-cohort comparisons.

standardization, unambiguously worsen across cohorts (see Figures 1A and 1C). The latter finding of the apparent decline in the aptitude of young Hispanic men across cohorts is consistent with the decline in educational attainment and the acquisition of full time work experience discussed in the previous section.

A further indication that there was a differential decline in the preparation and/or quality of Hispanic men across cohorts relative to other racial, ethnic and gender groups can be seen in the across-cohort changes in the educational attainment of mothers and fathers presented in Table 3. Note that the highest grade completed by mothers and fathers improves across cohorts for all groups but Hispanic men. Indeed, it is somewhat curious that this holds for Hispanic women. One might expect that the across-cohort change in the educational attainment of parents would be similar for Hispanic men and women. We believe these across-cohort differences in parental education by gender among Hispanics are most likely attributable to gender differences in the incidence of missing information on parental education across cohorts. In particular, we note that while the incidence of missing information on parental education declined across cohorts for Hispanic women (as it did for all other racial groups), Hispanic men in the later cohorts were more likely to have missing information on parental education compared to those in the early cohorts.[32]

In summary, it does appear that while certain groups, especially black men and women and Hispanic women, appear to have come from higher quality backgrounds in the later birth cohorts we analyze, the same cannot be said for Hispanic men. For the latter group, all of the indicators we examine indicate an overall decline across cohorts in their personal and family backgrounds.

[32] We also investigated whether our origin-based Hispanic classification was creating a gender bias. We compared the NLSY79 survey definition of Hispanics with our classification and how the use of either impacts a variety of our variables. There appear to be no gender bias in classification in that the differences across Hispanic definitions do not vary differentially by gender.

Meanwhile, the youth cohorts we analyze appear to be coming to adulthood under very different economic conditions, as noted in the Introduction. Previous studies (e.g., Cain and Finnie 1990) have provided evidence that differences in labor demand across local markets to a large degree explain the differential labor market success of youth groups, particularly young black and white males. In Figures 2-3, we plot indicators of local labor demand conditions: the local area unemployment rate and the size of the labor force. The unemployment figures (Figures 2A and 2B) illustrate that the economic conditions faced by our youth samples changed dramatically across cohorts. While the early cohorts of young men and women who came to adulthood in the late 1960s and through the 1970s were entering the labor market towards the tail end of an economic boom period, the cohort reaching adulthood in the 1980s are doing so in the trough part of a business cycle. Another striking feature of this data are the racial differences. Hispanic men and women of both cohorts tend to reside in areas of higher unemployment particularly in their 20s, relative to black and white youth. Hispanic young men and women also tend to reside in larger, presumably denser and more urban labor markets, while whites tend to reside in the smaller labor markets.

Another factor that may be important in explaining across-cohort differences in youth's human capital accumulation decisions are the rising costs of college attendance. In the 1970s rising college tuition and fees generally kept pace with inflation, but grew rapidly in the 1980s with a reported 54 percent real growth rate (The College Board 2003). As shown in Figures 4A and 4B, the real costs of college attendance faced by our samples did increase dramatically across cohorts. These figures also show that the rapid rise in college costs did not really affect the early cohorts during their college-age years, while the later cohorts faced this growth leading to and during their college-going years. Hispanic young men and women tend to have grown up in regions of the country offering relatively lower tuition rates. The College Board also reports that

on average colleges in the Southwest—where most Hispanics come from—offer the lowest tuition rates, while New England tends to offer the highest.

3.3 Differences in Wage Attainment across Cohorts

The patterns of schooling and early work experiences by race and gender varied substantially across cohorts. In this section, we address the potential impact these differences might have had on their labor market outcomes.

Table 4 presents mean hourly wage rates of youth as of age 16 and onwards.[33] All wages are deflated to be in 1982-84 dollars using the CPI. In general, mean wages rise with age within each cohort. This is what we would expect, as youth accumulate more of schooling and work experience. One must also keep in mind in examining these wages that the sample over which wages are observed could be affected by the selectivity of who is working at each age. How this affects our interpretation of what we find in the data will be discussed in the next section.

With respect to the wages of youth and young adults across the cohorts we analyze, there are three notable changes. First, the average wages for ages 16-27 generally decline across cohorts for all racial/ethnic and gender groups. This decline in wages is larger for men than women and is notably highest for Hispanic men.[34] Among youth of the early cohorts, Hispanic young males earned more than white male youth at age 22 and onwards. In contrast, white male youth of the later cohorts had higher wage levels than Hispanic male youth in their post-college 20s.

Annual wage growth rates between ages 16 to 27 also declined across cohorts. Among men, the average annual wage growth over the ages 16 to 27 for males was 7% for the earlier co-

[33] We begin our wage analysis at age 16 because the few wage observations at earlier ages create a lot of noise.

[34] Bound and Johnson (1992) also document, using data from the Current Population Survey (CPS) that the real wages of younger workers, especially those with less education, declined during the 1980s relative to earlier cohorts of young workers.

horts and 5.1% for later cohorts.[35] Among women, average annual wage growth was 6.5% for the earlier cohorts and 4.6% for later cohorts. Hispanic men experienced the greatest decline in wage growth. In contrast, Hispanic women average annual wage growth actually rose from 3.7% to 5%.

Finally, we find that between ages 24 and 27—the oldest ages that we analyze—wage growth did not change across cohorts, and for some groups, actually increased across cohorts.[36] This is noteworthy since wage observations for these ages are less prone to selective biases such as those from differential work while in school at the earlier ages. Wage growth among the early male cohorts between ages 24 and 27 was 4.4% and 4.1% among more recent male youth cohorts. Wage growth rate is lower by only 0.3 percentage points than in earlier male youth cohorts at these more adult ages.[37] White male youth's wage growth at this age range did not change across cohorts, and declined only among blacks and Hispanics. Meanwhile, the wage growth rates of young women between ages 24 and 27 actually improved across cohorts. At these more adult ages, the wages of women in the early cohorts were stagnating or declining (for black and Hispanic women). Among all women of the early cohort, wages between ages 24 and 27 grew at an annual rate of 1.4%; this growth rate doubled to 3% among the later cohorts (a 1.6 percentage point increase).[38]

These three stylized facts taken together suggest a significant slowing down in the gap in wage levels across youth cohorts as they age. At adult ages of these cohorts, cross-cohort changes in wage growth rates either outright improved (all women) or did not change (white

[35] The across-cohort declines in wage growth between ages 16 to 27 are statistically significant at the 1% level for all race/ethnicity and gender groups, except Hispanic women (noted further below).

[36] This result is robust regardless of where we put the older age cut-off (e.g., if we calculate wage growth rates for ages 25 and 27 instead).

[37] This across-cohort decline in wage growth between ages 24 to 27 is not statistically different from zero.

[38] This across-cohort improvement in wage growth is statistically significant at the 1% level.

men) or slightly declined (black and Hispanic men). These patterns suggest that while youth of the later cohorts started working at significantly lower wage levels, by the time they reached adulthood, the later cohort were experiencing even faster wage growth. Finally, the across cohort improvement in the wage growth rates of women relative to men indicate a convergence in the male-female wage gap as these young adults age.

Can the differences in the patterns of early work experience accumulation documented above potentially account for some of these cross-cohort wage differences? The later cohort's faster wage growth at adult ages suggests that the economic gain to working while young increased across cohorts, particularly for women. It also may suggest, however, that cohorts of the 1980s are different in substantive ways from the earlier youth. The descriptive statistics suggest that the composition of inherent skill and family background traits among youth of the 1980s is substantively different from the earlier cohorts. Furthermore, they faced different labor market conditions and costs to attending college. More importantly, these differences may lead them to make different decisions about the types of activities they engage in while young. The latter might suggest the role of composition effect rather than a true rise in the returns to early labor market experience in explaining these cross-cohort differences. In the next section, we present a framework that attempts to attribute the change in these wage outcomes across cohorts to its various factors.

4. Econometric Framework for Estimating Returns to Work Experiences and Wage Decomposition

This section describes the econometric specifications used to analyze the effects of early work and schooling experience on subsequent wage rates of young men and women. We begin by presenting the specification of the wage equation that is common to all three of the econometric approaches. Our conceptual formulation distinguishes an agent's participation in

one of the following categories of activities at any age/time period:

- *Activity* 1: full-time schooling (which is the base category),
- *Activity* 2: part-time work which takes place while attending school
- *Activity* 3: part-time work that occurs while not enrolled in school
- *Activity* 4: full-time employment
- IGNORE FOR NOW: Activity 5: military category for men (activity 5) *which we may fold into activity 5*
- *Activity* 5: other, non-work, non-school activities, including caring for children by women.

Let d_{iati} denote a 0/1 indicator variable, where $d_{iatk} = 1$ if the i^{th} individual is observed to be engaged in *Activity k* at age *a* in (calendar) period *t* $d_{iati} = 0$ if *Activity k* is not chosen. It follows that $\sum_{j=1}^{J} d_{iatj} = 1$, for all *a*, *t* and *i*.

As we discuss below, we shall model an individual's decision of which of these activities to participate in at each age for ages 13 through 27. We are also interested in how these choices and an individual's wages at various ages depend on their accumulated skills and "experiences." In particular, we measure, as a vector of state variables as of age *a*, S_{ia}, these skills and experiences as the accumulated number of periods an individual spends in various activities. That is,

$$X_{ia} \equiv \{X_{1,ia}, X_{2,ia}, X_{3,ia}, X_{4,ia}, X_{5,ia}, X_{6,ia}\} \tag{1}$$

where X_1 is the accumulated years in school only, X_2 is the accumulated number of years of work and school, X_3 is the accumulated number of years in part-time work, X_4 is the accumulated number of years in full-time work, X_5 is the number of years in other, non-school, non-work activities where

$$X_{jia} = \sum_{l=13}^{a} d_{ilj}, \text{ for } j = 1,...,5. \tag{2}$$

We also include an individual's number of grades completed as of age *a*, X_7, in *X*.

We begin with the specifications of the wage equation, then discuss the valuation functions (or payoff functions) associated with the alternative activity choices, and then discuss the structure of the unobservables and their impacts on wages and valuation functions.

4.1 Wage Equations

We estimate the following Mincerian wage equation for individual i, at age a, in (calendar) time period t, and was born in (calendar) year c (for cohort):

$$\ln W_{iatj'} = \beta_{0cj} + \beta'_{Satj'} X_{iat} + \beta'_{Patj'} P_{ic} + \beta'_{Matj'} M_{it} + u_{iatj'}, \tag{3}$$

for employment types, $j' = 2$, 3, or 4, where W denotes the log of the *wage offer* the i^{th} individual receives at age a in period t from activity j'; X_{iat} is the vector of state variables measuring the individual's accumulated experiences as of age t and period t as defined in (1); P_{ic} is a vector of observable personal characteristics (test scores, demographic characteristics, etc.) for the i^{th} individual in birth cohort c; M_{it} is a vector of measures of local labor market conditions facing the individual at age t in period t; and $u_{iatj'}$ is the (unobserved) disturbance term.

Note that in our model, a person's *birth cohort year*, $c = t - a$, reflecting the general limitation of distinguishing between only two of these three temporal indicators, *birth cohort*, *calendar year* and *age*. Also note that the first six state variables in X_{iat} also are subject to an "adding up" property, i.e., $\sum_{k=13}^{a} \sum_{l=1}^{6} X_{l,ik} = a - 13$, so that we do not include age (a) as a regressor in (3).

The specification of the wage equation in (3) allows the *returns to skills*, the $\beta_{Satj'}$'s, to vary with (calendar) time, t, with the person's age or stage of the life cycle, a, and by the type of activity in which the wage offer is realized, j. (The same is true with respect to the *effects* of personal characteristics on wages, the $\beta_{Patj'}$'s, and of labor market conditions on wages, the $\beta_{Matj'}$'s.) To make things manageable, we shall restrict these dependencies in the following way:

$$\begin{aligned} \beta_{k,atj} &= \beta_{kj} + \beta_{ka} + \beta_{kc}, \text{ for } k = S, P, M, \; j = 2,3,4 \\ \beta_{0cj} &= \beta_{0j} + \beta_{0c}, \text{ for } j = 2,3,4, \end{aligned} \tag{4}$$

where we recall that c denotes the c^{th} birth cohort.

The estimation of the returns to skills in (3) is potentially subject to two related sources of bias. First, the accumulated skills/experiences, X_{Siat}, are likely to be correlated with the unobservable determinants of wages, u_{iatj}, which can result in *endogeneity bias*. This bias arises if variables such as ability or motivation are omitted from (3) and they also influence educational attainment and accumulated work experience. Evidence presented in Tables 3 and 4 heightens the concern about this source of bias. Second, the wage data are only available for young men and women when they choose to work, i.e., *Activities* 2, 3 and 4. If some of the same unobserved factors that influence wage offers (the u_{ictj}'s) also affect contemporaneous work decisions, estimation of (3) will be subject to *selectivity bias*. While the potential for either source of bias is well-documented in the literature about estimating wage equations, we briefly outline the elements of a choice-theoretic model that motivates how such biases are dealt with. This model will be used to characterize the dynamic selection estimator we employ in our empirical analysis.

4.2 Activity Choices over Life Cycle and Specification of Payoff Functions

Assume that individuals choose which $Activity_j$, j = 1,…,5 to engage in at each age, a, over their lifetimes. Let the subjective payoff, or utility, to the i^{th} individual who is age a in period t engaging in activity j be denoted by V_{iatj} and, for computational simplicity, that it can be approximated by the following linear function of personal characteristics, market conditions and past choices:[39]

[39] A more structural model of activity choice over the life cycle would represent these conditional valuation functions, V_{ictj}, in terms of: (i) preference orderings over goods and leisure, (ii) intertemporal budget constraints, (iii) structural equations that map wages as functions of human capital stocks and their returns, and (iii) human capital production functions that map how future wages depend upon past (and current) work and schooling experiences. The specification and estimation of such structural representations has been the focus of several recent papers in the econometrics literature. See Eckstein and Wolpin (1989) and Rust (1992) for surveys of earlier work in this area and

$$V_{iatj} = \begin{cases} \lambda_{0cj} + \lambda_{Watj} \ln W_{iatj} + \lambda'_{Satj} X_{iatj} + \lambda'_{Patj} P_{ic} + \lambda'_{Matj} M_{it} + \lambda'_{Fatj} F_{ic} + \varepsilon_{iatj}, \text{ for } j = 2,3,4 \\ \lambda_{0cj} + \lambda'_{Satj} X_{iatj} + \lambda'_{Patj} P_{ic} + \lambda'_{Matj} M_{it} + \lambda'_{Fatj} F_{ic} + \varepsilon_{iatj}, \text{ for } j = 1,5, \end{cases} \quad (5)$$

where F_{ic} is a vector of family background variables that influence a young man's activity choices, and ε_{iatj} is a state-specific unobservable variable. At each age, young men and women choose that activity k—from the set of J (= 5) feasible activities—that maximizes their utility:

$$\text{Choose } \textit{Activity } k \ (d_{iatk}=1) \text{ if and only if } V_{iatk} = \max_{j \in J} \{V_{iatj}\}. \quad (6)$$

Again, we impose the following structure on the coefficients in our specification of the valuation function, i.e.:

$$\begin{aligned} \lambda_{k,atj} &= \lambda_{kj} + \lambda_{ka} + \lambda_{kc}, \text{ for } k = S,P,M, j = 1,...,5 \\ \lambda_{0cj} &= \lambda_{0j} + \lambda_{0c}, \text{ for } j = 1,...,5, \end{aligned} \quad (7)$$

4.3 Unobservables and Returns/Payoffs to Unobservables

Endogeneity and selection biases arise when u_{iatj} is correlated with current or past ε_{iatj}'s and from the fact that the "reduced form" versions of (5) contain both u_{iatj} and ε_{iatj}. As a result, the elements in X_{iat} are not orthogonal to u_{iatj} so that least squares methods need not produce unbiased estimates of the $\beta_{j'}$'s. To deal with source of endogeneity, as well as the selectivity of when wage offers are observed, we employ a estimation strategy that adapts the econometric framework in Heckman (1981a, 1981b), Cameron and Heckman (1998, 2001), Carneiro, Hansen and Heckman (2003), Cunha, Heckman and Navarro (2005), and Heckman and Navarro (2005) for estimating dynamic discrete-choice models that condition on past choices. Specifically, we jointly estimate a model of sequential life cycle activity choices implied by the decision rule in (6), using the payoff functions in (5), and the wage function in (3), in which we the ε_{iatj}'s and u_{iatj}'s are characterized by the following *factor-analytic*, *random effects* structure:

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more recent papers by Hotz and Miller (1993), Hotz, Miller, Sanders and Smith (1994), and Keane and Wolpin (1997, 1999). Because we focus on analyzing the (net) returns to early work experiences on wages, we adopt a "semi-reduced-form" specification of V_{iatj} in (5) that depends on the determinants of wages given in (3) and other personal and family background characteristics that would likely affect a youth's preferences over goods and leisure.

$$u_{iatj'} = \boldsymbol{\kappa}'_{ctj'}\boldsymbol{\xi}_{ic} + \omega_{iatj'}, \text{ for } j' = 2, 3, 4, \tag{8}$$

and

$$\varepsilon_{iatj} = \boldsymbol{\alpha}'_{ctj}\boldsymbol{\xi}_{ic} + \nu_{iatj}, \text{ for } j = 1,...,5, \tag{9}$$

where $\boldsymbol{\xi}_{ic}$ is a person-specific vector of disturbances or factors associated with the c^{th} birth cohort; $\boldsymbol{\alpha}_{ctj}$ and $\boldsymbol{\kappa}_{ctj'}$ are vectors of cohort-specific choice- and wage-specific factor loadings that are allowed to vary with (calendar) time t; and ν_{iatj} and $\omega_{iatj'}$ denote idiosyncratic disturbance terms that are assumed to be uncorrelated with $\boldsymbol{\xi}_{ic}$. Note that we assume, for now, that the distributions for $\boldsymbol{\xi}_{ic}$, ω_{iatj} and ν_{iatj} may vary across cohorts. The latter assumption will be tested in the empirical work to be presented below.

We note that following from the work of Heckman and his collaborators, the use of the above factor structure allows for a relatively general contemporaneous and temporal correlation structure between the disturbances in the wage equations (u_{iatj}) and payoff or valuation functions (ε_{iatj}). In addition, the factor structure—especially for the disturbances in the wage equations in (8)—has a natural interpretation. In particular, the person-specific factors, $\boldsymbol{\xi}_{ic}$, can be viewed as characterizing unobserved skills of individuals and the factor loadings represent "returns" to these traits in terms of wages and/or utility. Consistent with this view that $\boldsymbol{\xi}_{ic}$ measures unobserved, person-specific skills, we incorporate "measurement equations" in which we assume that the factors are reflected in measures of ability (*IQ*) and skills related to the control of one's environment, as measured by a score the *Rotter Scale*.[40] The measurement equations take the following form:

$$IQ_{ic} = \boldsymbol{\delta}'_1\boldsymbol{\xi}_{ic} + \nu_{1ic} \tag{10}$$

[40] The Rotter Internal-External Locus of Control Scale is designed to measure the extent to which individuals believe they have control over their lives through self-motivation or self-determination (internal control), as opposed to the extent that the environment (i.e., chance, fate, luck) controls their lives (external control). As such, it is a measure of non-cognitive or personality traits.

$$Rotter_{ic} = \boldsymbol{\delta}_2' \boldsymbol{\xi}_{ic} + \nu_{2ic}. \tag{11}$$

where $\boldsymbol{\delta}_1$ and $\boldsymbol{\delta}_2$ are factor loadings and ν_{1ic} and ν_{2ic} are i.i.d. measurement errors. In preliminary estimation, we have examined models with 2 cohort-specific factors (L = 2) and cohort-specific, but time (and age) invariant factor loadings. Our preliminary tests suggest the significance of the second random factor. We are now exploring more general specifications in which we allow for changes in the factor loadings with age.

As with the parameters associated with observables in (4) and (7), we impose the following structure on the factor loadings in (8) and (9):

$$\boldsymbol{\kappa}_{ctj'} = \boldsymbol{\kappa}_c + \boldsymbol{\kappa}_t + \boldsymbol{\kappa}_{j'}, \text{ for } j' = 2,3,4 \tag{12}$$

and

$$\boldsymbol{\alpha}_{ctj} = \boldsymbol{\alpha}_c + \boldsymbol{\alpha}_t + \boldsymbol{\alpha}_j, \text{ for } j = 1,...,5 \tag{13}$$

The estimation of the multi-state, discrete choice model specified in equations (3) through (9) is accomplished using the non-parametric maximum likelihood (NPML) strategy proposed by Heckman and Singer (1984) in which the distribution of $\boldsymbol{\xi}_{ic}$ is approximated by a discrete distribution with finite points of support. In particular, for each the L elements in the vector $\boldsymbol{\xi}_{ic}$, we allow the number of discrete values for the distribution, K_l, the locations of the random variable (the ξ_{lk}'s, k = 1,...,K), and the associated probabilities [$p_{lk} \equiv \Pr(\xi_{li}=\xi_{lk})$] to be free parameters that are estimated in conjunction with the β's and λ's.

The dynamic selection estimation strategy outlined above has the potential to deal with the endogeneity and selectivity biases noted above. This specification explicitly accounts for the endogeneity of past choices in the estimation of contemporaneous choices and wage outcomes. Second, by using non-parametric procedures to account for $\boldsymbol{\xi}_{ic}$, it is unnecessary to make functional form assumptions about the distribution of this omitted variable. In this sense, our third es-

timator is more robust than the standard selection-correction estimators used in past work. Finally, the data from the three NLS surveys that we use in our analysis allows us to measure and to model all of the schooling and work choices young men and women make that might affect subsequent choices. Because we have data on schooling and work choices from age 13 on for all sample members, we minimize the "initial conditions" problem that can bias the estimation of life cycle models.[41] Such models require initializing the relationship between the stochastic process governing persistent unobservables, such as ξ_{ic}, and past choices reflected in X. In our case, this initialization occurs at age 12, where we assume that

$$E\left(\xi_{ic} \left| X_{i,12,t} \right.\right) = 0\,, \tag{14}$$

i.e., accumulated schooling and work experiences as of this age 12 are assumed to be uncorrelated with the person-specific random component affecting wages and choices (ξ_{ic}). This is a plausible assumption because youth typically have no discretion over their schooling choices prior to age 13 and our data suggests that they do not work prior to that age either.[42] The NLS data allow us to model all subsequent school/work choices and thereby allow ξ_i to be correlated with our schooling and experience variables in X_{iat} at each subsequent age in the estimation of (3).

4.4 Wage Decompositions

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With these consistent estimates of the returns to schooling and various types of work experience, we proceed to decompose the change in the wage distribution across cohorts to its components. To simplify, we first rewrite equation (1) as:

[41] Heckman (1981b) provides a detailed discussion of the initial conditions problem in life cycle models.

[42] Child labor laws in the U.S. prohibit youth from working prior to age 16 (or with parental consent at ages 14 and 15), and most states have mandatory school attendance laws for children younger than age 18.

$$\ln W_{ictj'} = \boldsymbol{\beta}'_{cj'} \boldsymbol{X}_{ict} + \boldsymbol{\kappa}'_{cj'} \boldsymbol{\xi}_{ic} + \omega_{ictj'} \tag{15}$$

where $X_{ict} \equiv [Z_{ict}^{w-s}, S_{ict}, E_{ict}, P_{ic}, M_{ict}]$. In the same spirit as Juhn, Murphy, and Pierce's (1993) wage decomposition, changes in the wage distribution come from changes in the distribution of the X's, changes in the prices of observable skills (the B's), and changes in the distribution of residuals. In our framework, we can additionally decompose the wage levels of men and women into changes in the prices of unobservables (the κ's) and in the distribution of unobservables (ξ):

$$\begin{aligned} Y_{ictj'} = &(\mathrm{X}_{ict} - \mathrm{X}_{i0t})\mathrm{B}_{0j'} + \mathrm{X}_{ict}(\mathrm{B}_{cj'} - \mathrm{B}_{0j'}) \\ &+ \kappa_{0j'}(\xi_{ic} - \xi_{i0}) + (\kappa_{cj'} - \kappa_{0j'})\xi_{ic} + \omega_{ictj'} \end{aligned} \tag{16}$$

The first term captures the effect of the across-cohort change in human capital acquisition (schooling and work experience) at the early cohorts' returns. The second term captures the effects of changing skill prices for observable skills at a fixed distribution of X. The third term captures the effect of across-cohort change in the distribution of unobservable skills at fixed returns to these unobservables. The fourth term captures the effect of change in the returns to unobservable skills at fixed distribution.

In practice, we generate the following counterfactual wage distributions using our parameter estimates and counterfactual human capital distributions:

$$\begin{aligned} Y^1_{ictj'} &= \mathrm{X}_{i0t}\mathrm{B}_{0j'} + \kappa_{0j'}\xi_{i0} + \omega_{ictj'} \\ Y^2_{ictj'} &= \mathrm{X}_{ict}\mathrm{B}_{0j'} + \kappa_{0j'}\xi_{i0} + \omega_{ictj'} \\ Y^3_{ictj'} &= \mathrm{X}_{ict}\mathrm{B}_{cj'} + \kappa_{0j'}\xi_{i0} + \omega_{ictj'} \\ Y^4_{ictj'} &= \mathrm{X}_{ict}\mathrm{B}_{cj'} + \kappa_{0j'}\xi_{ic} + \omega_{ictj'} \\ Y^5_{ictj'} &= \mathrm{X}_{ict}\mathrm{B}_{cj'} + \kappa_{cj'}\xi_{ic} + \omega_{ictj'} \end{aligned} \tag{17}$$

Thus, we attribute the change in $Y^2_{ictj'} - Y^1_{ictj'} = (\mathrm{X}_{ict} - \mathrm{X}_{i0t})\mathrm{B}_{0j'}$ to changes in observable quantities of skill; the change in $Y^3_{ictj'} - Y^2_{ictj'} = \mathrm{X}_{ict}(\mathrm{B}_{cj'} - \mathrm{B}_{0j'})$ to changes in observable skill prices; the change in $Y^4_{ictj'} - Y^3_{ictj'} = \kappa_{0j'}(\xi_{ic} - \xi_{i0})$ to changes in the distribution of unobservable skills; and

$Y^5_{ictj'} - Y^4_{ictj'} = (\kappa_{cj'} - \kappa_{0j'})\xi_{ic}$ to changes in the returns to these unobservables.

References

Acs, Gregory and Sheldon Danziger. 1993. "Educational Attainment, Industrial Structure and Male Earnings." *Journal of Human Resources* 28(3): 618-648.

Ahituv, Avner, Marta Tienda, Lixin Colin Xu, and V. Joseph Hotz. 1994. "Initial Labor Market Experiences of Black, Hispanic and White Men." Unpublished Manuscript, University of Chicago, June.

Altonji, Joseph and Rebecca Blank. 1999. "Race and Gender in the Labor Market." In *Handbook of Labor Economics* Vol 3C. Orley Ashenfelter and David Card, eds. North-Holland Elsevier Science, 3143-3251.

Bacolod, Marigee and V. Joseph Hotz. "Cohort Changes in the Transition from School to Work: What Changed and What Consequences did it have for Wages?" forthcoming, *Economics of Education Review*.

Blau, Francine and Lawrence Kahn. 1994. "Rising Wage Inequality and the U.S. Gender Gap." *American Economic Review* 84(2): 23-28.

Blau, Francine and Lawrence Kahn. 1996, "Wage Structure and Gender Earnings Differentials: An International Comparison." *Economica* 63(250): S29-S62.

Blau, Francine and Lawrence Kahn. 1997. "Swimming Upstream: Trends in the Gender Wage Differential in the 1980s." *Journal of Labor Economics* 15(1, Part 1): 1-42.

Blau, Francine. 1998. "Trends in the Well-Being of American Women, 1970-1995." *Journal of Economic Literature* 36(2): 112-165.

Borjas, George. 1985. "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants." *Journal of Labor Economics* 3(4): 463-489.

Borjas, George. 2000. *Issues in the Economics of Immigration*, NBER Conference Report, Chicago, University of Chicago Press.

Bound, John and George Johnson. 1992. "Changes in the Structure of Wages in the 1980s: An Evaluation of Alternative Explanations." *American Economic Review* 82(3): 371-392.

Bound, John and Richard Freeman. 1992. "What Went Wrong? The Erosion of Relative Earnings and Employment among Young Black Men in the 1980s." *Quarterly Journal of Economics*, 107(1): 201-232.

Buchinsky, Moshe. 1994. "Changes in the U.S. Wage Structure 1963-1987: An Application of Quantile Regression." *Econometrica*, 62(2): 405-458.

Cain, Glen and Ross Finnie. 1990. "The Black-White Difference in Youth Employment: Evidence for Demand-Side Factors." *Journal of Labor Economics* 8(1, Part 2): S364-S395.

Cameron, Stephen and James Heckman (1993), "The Nonequivalence of High School Equivalents," *Journal of Labor Economics*, 11(1), Part 1, January 1993, 1-47.

Cameron, Stephen and James Heckman (1998), "Life Cycle Schooling and Dynamic Selection Bias: Models and Evidence for Five Cohorts of American Males," *Journal of Political Economy*, 106, 262-333.

Cameron, Stephen and James Heckman (1999), "The Dynamics of Educational Attainment for Blacks, Hispanics, and Whites," NBER Working Paper No. 7249, July 1999.

Chaplin, Duncan and Jane Hannaway (1997), "High School Employment: Meaningful Connections for At-Risk Youth," Unpublished Manuscript, Urban Institute, 1997.

Cutler, David and Lawrence Katz. 1991. "Rising Inequality? Changes in the Distribution of Income and Consumption in the 1980s." *American Economic Review* 82(May): 546-51.

DiNardo, John, Nicole Fortin and Thomas Lemieux. 1996. "Labor Market Institutions, and the Distribution of Wages, 1973-1992: A Semi-Parametric Approach." *Econometrica* 64(5): 1001-1044.

Duncan, Brian, V. Joseph Hotz and Stephen J. Trejo. 2004. "Hispanics in the U.S. Labor Market." Unpublished manuscript. UCLA.

Eckstein, Zvi and Kenneth Wolpin (1989), "The Specification and Estimation of Dynamic Stochastic Discrete Choice Models," *Journal of Human Resources*, 24, 562-598.

Ehrenberg, Ronald and Daniel Sherman. 1987. "Employment While in College, Academic Achievement and Post-College Outcomes: A Summary of Results." *Journal of Human Resources* 22(1): 1-24.

Filer, Randall. 1993. "The Usefulness of Predicted Values for Prior Work Experience in Analyzing Labor Market Outcomes for Women." *Journal of Human Resources* 28(3): 519-537.

Goldin, Claudia. 2002. "The Rising (and then Declining) Significance of Gender." NBER Working Paper 8915.

Gottschalk, Peter. 1997. "Inequality, Income Growth, and Mobility: The Basic Facts." *Journal of Economic Perspectives* 11(2): 21-40.

Grogger, Jeff. 1992. "Arrests, Persistent Youth Joblessness, and Black/White Employment Differentials." *Review of Economics and Statistics* 74(1): 100-106.

Heckman, James (1981b), "The Incidental Parameters Problem and the Problem of Initial Conditions in Estimating a Discrete Time–Discrete Data Stochastic Process," in *Structural Analysis of Discrete Data with Econometric Applications*, eds. D. McFadden and C. Manski, Cambridge, MA: MIT Press, 179-197.

Heckman, James J. (1976), "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and A Simple Estimator for Such Models," *Annals of Economic and Social Measurement,* 5/4, pp. 475-92.

Heckman, James J. (1979), "Sample Selection Bias as a Specification Error," *Econometrica*, 47, pp. 153-161.

Heckman, James J. (1981a), "Statistical Models of Discrete Panel Data," in *Structural Analysis of Discrete Data with Econometric Applications*, eds. D. McFadden and C. Manski, Cambridge, MA: MIT Press, 114-178.

Heckman, James J. (1982), "Heterogeneity and State Dependence," in *Studies in Labor Markets*, ed. S. Rosen, Chicago: University of Chicago Press.

Heckman, James, Lance Lochner and Christopher Taber. 1998. "Explaining Rising Wage Inequality: Explorations with a Dynamic General Equilibrium Modle of Labor Earnings with Heterogeneous Agents." *Review of Economic Dynamics* 1(1): 1-58.

Heckman, James J. and Richard Robb (1985), "Alternative Methods for Evaluating the Impact of Interventions," in *Longitudinal Analysis of Labor Market Data*, eds. J. Heckman and B. Singer, New York: Cambridge University Press, 156-245.

Heckman, James J. and Burton Singer (1984), "A Method for Minimizing the Impact of Distributional Assumptions in Econometric Models of Duration Analysis," *Econometrica*, 52, 271-320.

Heckman, James J. and Edward Vytlacil. 2000. "Identifying the Role of Cognitive Ability in Explaining the Level of and Change in the Return to Schooling." NBER Working Paper 7820.

Hotz, V. Joseph and Robert Miller (1993), "Conditional Choice Probabilities and the Estimation of Dynamic Models," *Review of Economic Studies*, 60, 497-529.

Hotz, V. Joseph, Robert Miller, Seth Sanders, and Jeffrey Smith (1994), "A Simulation Estimator for Dynamic Models of Discrete Choice," *Review of Economic Studies*, 61, 265-289.

Hotz, V.Joseph. Lixin Colin Xu, Marta Tienda, and Avner Ahituv. 2002. "Are There Returns to the Wages of Young Men from Working While In School?" *Review of Economics and Statistics* 84(2): 221-236.

Juhn, Chinhui, Kevin Murphy, and Brooks Pierce. 1993. "Inequality and the Rise in Returns to Skill." *Journal of Political Economy* 101(3): 410-442.

Katz, Lawrence and David Autor. 1999. "Changes in the Wage Structure and Earning Inequality." In *Handbook of Labor Economics* Vol 3A. Orley Ashenfelter and David Card, eds. North-Holland Elsevier Science, 1463-1558.

Katz, Lawrence and Kevin Murphy. 1992. "Changes in Relative Wages, 1963-1987: Supply and Demand Factors." *Quarterly Journal of Economics* 107(1): 35-78.

Keane, Michael and Kenneth Wolpin (1997), "The Solution and Estimation of Discrete Choice Dynamic Programming Models by Simulation: Monte Carlo Evidence," *Review of Economics and Statistics*, 76:4, 609-32.

Keane, Michael and Kenneth Wolpin (1999), "The Career Decisions of Young Men," *Journal of Political Economy*, 105:3, 473-522.

Kilburn, Rebecca. 1993. "Minority Representation in the U.S. Military." Unpublished Ph.D. Dissertation, University of Chicago.

Levy, Frank and Robert Murnane. 1992. "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations." *Journal of Economic Literature*, 30(3): 1333-1381.

Light, Audrey (2001), "In-School Work Experience and the Returns to Schooling," *Journal of Labor Economics*, 19(1), 65-93.

Light, Audrey and Manuela Ureta. 1995. "Early Career Work Experience and Gender Wage Differentials." *Journal of Labor Economics* 13(1): 121-154.

Light, Audrey. 2001. "In School Work Experience and the Returns to Schooling." *Journal of Labor Economics* 19(1): 65-93.

Mare, Robert and Christopher Winship. 1984. "The Paradox of Lessening Racial Inequality and Joblessness among Black Youth: Enrollment, Enlistment, and Employment, 1964-1981." *American Sociological Review* 49(1): 39-55.

Meyer, Robert and David Wise. 1982. "High School Preparation and Early Labor Force Experience." In *The Youth Labor Market Problem: Its Nature, Causes and Consequences*, Richard Freeman and David Wise, eds. Chicago: University of Chicago Press, 227-339.

Mulligan, Casey and Yona Rubinstein. 2004. "The Closing of the Gender Gap as a Roy Model Illusion." NBER Working Paper 10892, November 2004.

National Research Council and Institute of Medicine, 1998, *Protecting youth at work: health, safety, and development of working children and adolescents in the United States*, Report of the Committee on the Health and Safety Implications of Child Labor, Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education, Washington, D.C.: National Academy Press.

National Research Council, 2001, *America Becoming: Racial Trends and Their Consequences*, Volumes I and II, N. J. Smelser, W. J. Wilson, and F. Mitchell, Eds., Commission on Behavioral and Social Sciences and Education, Washington DC: National Academy Press.

Neal, Derek and William Johnson. 1996. "The Role of Pre-Market Factors in Black-White Wage Differences." *Journal of Political Economy* 104(5): 869-895.

Rhoton, Patricia. 1984. "Attrition and The National Longitudinal Surveys of Labor Market Experience: Avoidance, Control and Correction." Columbus, OH: Center for Human Resource Research, The Ohio State University.

Ruhm, Christopher. 1997. "Is High School Employment Consumption or Investment?" *Journal of Labor Economics* 14(4): 735-776.

Rust, John (1994), "Structural Estimation of Markov Decision Processes," in *Handbook of Econometrics*, Vol. 4, eds. R. Engle and D. McFadden, Amsterdam: North-Holland, 3082-3143.

Smith, James P. 2001. "Race and Ethnicity in the Labor Market: Trends Over the Short and Long Term," in *America Becoming: Racial Trends and Their Consequences*, Vol II, N. J. Smelser, W. J. Wilson, and F. Mitchell, Eds., Commission on Behavioral and Social Sciences and Education, Washington DC: National Academy Press.

Smith, James P. and Barry Edmonston. 1997. *The New Americans: Economic, Demographic, and Fiscal Effects of Immigration*. Washington, D.C.: National Academy Press.

The College Board. 2003. *Trends in College Pricing*. Washington, DC: The College Entrance Examination Board.

Toossi, Mitra. 2002. "A Century of Change: U.S. labor force from 1950 to 2050." *Monthly Labor Review* 125(5): 15-28.

U.S. Department of Education, National Center for Education Statistics. Higher Education General Information Survey (HEGIS), 1969-74, 1976, 1980, 1984, 1985 [Computer files]. ICPSR version. Washington, DC: U.S. Dept. of Education, National Center for Education Statistics [producer], various years. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], various years.

U.S. Department of Education, National Center for Education Statistics. Integrated Postsecondary Education Data System (IPEDS), 1986 to 1990 [Computer files]. ICPSR version. Washington, DC: U.S. Dept. of Education, National Center for Education Statistics [producer]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], various years.

Wolpin, Kenneth. 1992. "The Determinants of Black-White Differences in Early Employment Careers: Search, Layoffs, Quits, and Endogenous Wage Growth." *Journal of Political Economy* 100(3); 535-560.

Zagorsky, Jay and Patricia Rhoton. 1998. "Attrition and the National Longitudinal Surveys' Young Women Cohort." Columbus, OH: Center for Human Resource Research, The Ohio State University.

Data Appendix

A. Sample Exclusion Criteria

The criteria we use to select our samples are summarized by the following table:

TABLE A-1. Sample Selection Criteria

	Survey			
	NLS-YM	NLS-YW	NLSY79, Men	NLSY79, Women
Total Number of Respondents	5,225	5,159	6,403	6,283
Age 14-17 as of baseline interview year	2,653	2,029	2,846	2,736
Sample exclusion criteria:				
Missing birth dates, or dates cannot be reconciled with reported age in baseline	-11	-4	-6	-3
Missing information at initial age (age 13)	-6	-14	-6	-5
Military oversample			-1	
Total in our sample:	2,636	2,011	2,833	2,728

We first excluded respondents age 18 and older as of the baseline interview year (1966 in the NLSYM; 1968 in the NLSYW; 1979 in the NLSY79). We further excluded respondents with missing birth date information, or whose reported birthdates cannot be reconciled with their reported age as of the baseline interview year. Finally, we excluded individuals with insufficient or missing information at the baseline interview year from which to infer their activities and schooling at age 13, the age of initialization for our panels.

As discussed more fully in the text of the paper, these restrictions were made to ensure that we collected prospective information and as complete information as possible on all early employment experiences for these youth cohorts.

B. Construction of Activity Variables

From information commonly available across surveys, we determined if, for each calendar month, respondents were in the military, attending school, and/or working. We began by constructing four activity matrices: one matrix to keep track of military enlistment, another to indicate schooling, the third to indicate work, and the fourth with information on hours worked. The size of each of these matrices are total number of respondents by total number of calendar months.[43]

In the military matrix, for each individual respondent row, a column associated with the start date of military enlistment was coded as "1." All subsequent columns were coded as "1" up to the column associated with the end date of military enlistment. All other elements were coded to "0"; however, if the respondent attrited from the survey the entry for all subsequent columns

[43] In the NLS-YM, the first column indicates activity on January 1955 and the last column December 1981. In the NLS-YW, monthly information is recorded from January 1957 to December 1983. In the NLSY79, monthly information is recorded from January 1968 to December 1992. The dates have a wider span than indicated by our age-specific sample restriction because we initially wanted to collect information without making the age restriction.

would be "-1." We performed the same procedure in constructing the schooling and work matrices, based on dates of schooling attendance and dates of work on jobs held.

If a respondent worked in that calendar month, the corresponding element in the hours matrix was then filled with the respondent's weekly hours worked. This variable was calculated as the total hours worked across jobs per month divided by weeks worked in that month.

Based on these monthly activity matrices, we next classified respondents into mutually exclusive activity categories at each calendar year. First, we determined if the respondent was enlisted in the military during any of the 12 months in the calendar year, that is, if any of the columns corresponding to January to December of year X equals 1. If so, we classified him or her as engaged in the military (activity 5 in the text of the paper).

Among those not classified in activity 5, if the respondent worked and attended school during any month in the calendar year, we classified this person as in "school and part-time work" (activity 2 in the text of the paper). In addition, if the month of last school enrollment is less than or equal to the work month start date in the same calendar year, we classified this person as "school then work" (activity 1.5). We initially maintained this sub-classification in an attempt to treat summer work differently from work while in school. However, a closer examination of the data revealed insignificant differences in the patterns across both classifications of "school and work." This, coupled with the small numbers in the activity 1.5 category, led us to collapse the sub-classification into just "school and part-time work."

We next determined full-time employment among person-years not already classified in activities 5 and 2. From the entries in the hours matrix, we constructed the average weekly hours worked during the year by taking the average of hours entries across the 12 months of each year. If a respondent worked at least an average of 35 hours per week and worked for at least 11 months of the calendar year, we classified this person as working full-time (activity 4 in the text of the paper). Otherwise, if the person worked during any of the months of the calendar year, and is not classified in activities 5, 2, or 4, the person-year is classified in "part time work" (activity 3 in the text of the paper).

Among person-year observations still unclassified, if the schooling matrix reports schooling attendance during any month of the calendar year, we classify the person as engaged in "school only" (activity 1 in the text of the paper). Finally, person-year observations still remaining unclassified but who have not attrited from the survey were assigned to the "other" category (activity 6 in the paper).

C. Wage Data

Hourly wages are drawn from the job history portion of the surveys. Respondents report the rate of pay and the time unit of that rate at each job they are currently working at or where they last worked. We first take the maximum hourly wage across jobs, if the respondent has more than one, during that month. We then take the average of these hourly wage rates across months worked to form an annual hourly wage rate.

Individuals who worked in that year but with missing annual wage information were assigned an imputed hourly wage according to their age and race. We use the CPI to deflate all wages to 1982-84 dollars.

In constructing our annualized measure of hourly wages, we also referred to the NLS documentation and Appendices detailing the construction of survey-provided "keyed" wage variables for each separate survey. We paid particular attention to how the survey calculated a variable reporting respondents' wages in the past calendar year.[44] In some cases, extremely low wage observations (less than 25 cents per hour) were replaced to missing and extremely high wage observations (greater than $50 an hour) were replaced to missing. The top-code values and bottom wage restrictions varied across surveys and survey year; we follow the guidelines as outlined in each survey and survey year. Except for a couple of wage observations hand-edited by the survey administrators, our procedure mimics the survey's construction of past-calendar-year wage variables. We have the added advantage of being able to construct annual wages for intervening calendar years when the NLS-YM and NLS-YW were not surveyed (4 years in the NLS-YM and 4 years in the NLS-YW).

D. Constructing the Person-Age Panels

The data resulting from the efforts in Sections B and C above is arrayed as person-year observations. We next assigned each person-year observation an age. We define age to be each person's age as of January 1st of the calendar year. Since the construction of this variable is consistent across years and surveys, the date at which to calculate age within the year is somewhat arbitrary. This age variable is also not directly used in our analyses other than as a way to index observations in the panel.

Time-invariant variables such as family background characteristics and ability measures were then merged to the person-age panels.

E. Sensitivity Analysis of Hispanic Classification: Representativeness and Gender Bias

Given the differential patterns for Hispanic males discussed in the text, we turned to other data sources to investigate if our Hispanic classification generates a representative Hispanic sample. Table A-2 below uses data from the decennial Census (IPUMS). Our method of classifying Hispanics by parental (or grandparents') country of origin indicates that we are picking up about the same proportion of Hispanics as there are in the 1970 Census for both the NLS Original Cohorts and the NLSY-79. The Hispanic proportions in the 1980 Census suggest that we are likely undercounting Hispanics in the later 1979 cohort. Given that the NLSY79 was fielded (and thus the Hispanic samples created) before the 1980 Census, this under-representation might make sense.

[44] We did not use this constructed variable in our analysis because it is not available for intervening calendar years when the NLS-YM and NLS-YW were not surveyed (4 years for each).

TABLE A-2. Race classification in CPS versus our definition in NLSs

	Fraction Hispanics in Population, from Census				Fraction Hispanics in the NLSs, using our race definition			
	1970 IPUMS		1980 IPUMS					
Age	Male	Female	Male	Female	Males, 1966 YM Cohort	Females, 1968 YW Cohort	Males, 1979 NLSY Cohort	Females, NLSY 79 Cohort
14	0.0533	0.0566	0.0788	0.0784	0.0556	0.0425	0.0519	0.046
15	0.0541	0.0527	0.0775	0.0793	0.0604	0.0357	0.0377	0.0358
16	0.0526	0.0538	0.0781	0.0755	0.0662	0.0231	0.035	0.042
17	0.0528	0.0517	0.0757	0.0777	0.0539	0.0262	0.045	0.0463
Total	0.0542	0.0564	0.0783	0.0772	0.0592	0.0318	0.0419	0.0422

On the other hand, the under-count of Hispanics in the NLSY79 is suggested by a comparison of our definition of Hispanics to the NLSY79 survey definition. The NLSY79 Hispanic classification is from the NLSY79 variable "Sample Identification Code," which is the basis for weighting NLSY79 data. Hispanic classification is based on screener's observation, those who self-identified as Hispanics, or if they didn't identify themselves Hispanic, those who identified themselves by ethnic origin including Filipino or Portuguese, those whose householder or householder's spouse reported speaking Spanish at home as a child, and those whose family surname is listed on the Census list of Spanish surnames. (p 251, NLSY79 User's Guide 2001)

TABLE A-3. NLSY79 race classification versus our definition

	Our race definition			
SAMPLE CODE, NLSY79*	white	black	hispanic	Total
Cross Male White	1155	0	7	1162
Cross Male Wh. Poor	95	0	0	95
Cross Male Black	0	176	1	177
Cross Male Hispanic	**56**	**0**	**53**	**109**
Cross Female White	1118	0	6	1124
Cross Female Wh. Poor	76	0	1	77
Cross Female Black	0	190	3	193
Cross Female Hispanic	**56**	**0**	**60**	**116**
Sup Male Wh. Poor	319	0	4	323
Sup Male Black	0	583	7	590
Sup Male Hispanic	**177**	**0**	**200**	**377**
Sup Fem Wh Poor	315	0	3	318
Sup Female Black	0	505	19	524
Sup Female Hispanic	**177**	**0**	**199**	**376**
Total	3554	1454	563	5561

* The sample identification code provided by the NLSY79.

"Cross" refers to cross-section sample; "Sup" to supplemental samples.

Our ancestral classification for the most part picks up Hispanics as defined by the survey, but does tend to undercount Hispanics and classify them as whites. The numbers in Table A-3 do not suggest a gender bias, however, as the numbers fail to indicate that we are undercounting Hispanics and over-counting whites differentially by gender.

We further investigated the consequences of this undercount for Hispanics and over-count for whites on youth's school to work transition and their activities. In particular, we estimated the slope or growth rate of the activity-age profiles under each Hispanic classification scheme in the NLSY79. That is, we regressed cumulative years of each activity (for all 6 activity categories) on age under our Hispanic classification scheme versus the survey's. This exercise showed that our method of classifying Hispanics tends to *understate* the Hispanic-white gap in human capital accumulation in the NLSY79. Again, there is no differential change across classifications by gender.

The implications of the likely undercount of Hispanics in the NLSY79 for cross-cohort changes in Hispanic "quality" are thus likely to be underestimated as well. One way to gauge the potential implications of our method would be to use our definition to categorize Hispanics in the 1966 Young Men and 1968 Young Women cohorts while using the Hispanic identifiers provided by the survey in the NLSY79 for the 1979 cohort. Across most all measures of activities, the cross-cohort changes for Hispanic youth are indeed understated when using our definition for both cohorts. Across Hispanic male youth cohorts, with the use of the NLSY79 race definition for the 1979 cohort: highest grade completed would have declined more, work while in school would have increased less, part-time work increase more, non-work non-schooling activities would have declined less. The gains in human capital accumulation across cohorts of Hispanic women would also have been less. This is also true with personal and family background variables in that percentile scores on the IQ/AFQT would have declined more across cohorts of Hispanic male youth (and less for white males), although this difference in percentile scores cannot be interpreted as a decline per se. Finally, wages would also decline more across cohorts of both Hispanic male and female youth.

In a further attempt to understand what is giving rise to the difference in the across-cohort change in parental educational attainment across Hispanic men and women, we turn to Hispanics in the March CPSs. A subset of CPS households can be matched to attach parents' records to youth and generate the parental background variables of interest.[45] This check showed that for both male and female Hispanic youth, parents' years of schooling on average are increasing over time in the CPS. As noted in the paper, the parents of Hispanic female youth in the NLSs also display this increase. For Hispanic male youth across the NLSYM and NLSY-79, however, parents' years of schooling are declining.

Based on the figures in Tables A-3 and A-4 discussed above, we think a likely interpretation for the Hispanic gender disparity is partly due to the gender difference in the incidence of missing information in parental background across cohorts, a point we raise in the paper. Hispanic male youth in the NLSY79 tend to have more missing information on parental education relative to the early cohort, while the incidence of missing declined for Hispanic female youth.

[45] We begin by selecting youth aged 14 to 25 not living in group quarters. Parents' characteristics are not directly available for these youth, but some of the households from which these youth come from can be identified in the CPS. Using the household ID, we merge the records of each youth's mother's and/or father's years of schooling completed. Our match rate was greater for the mother records (1971:96%, 1977:92%, 1978:91%, 1979:91%, 1980:90%) than for father records (1971:78%, 1977:76%, 1978:75%, 1979:75%, 1980:74%).

Figure 1A: Deviation of Men's Cohort-Specific IQ/AFQT Distns. from Distns. for All Men

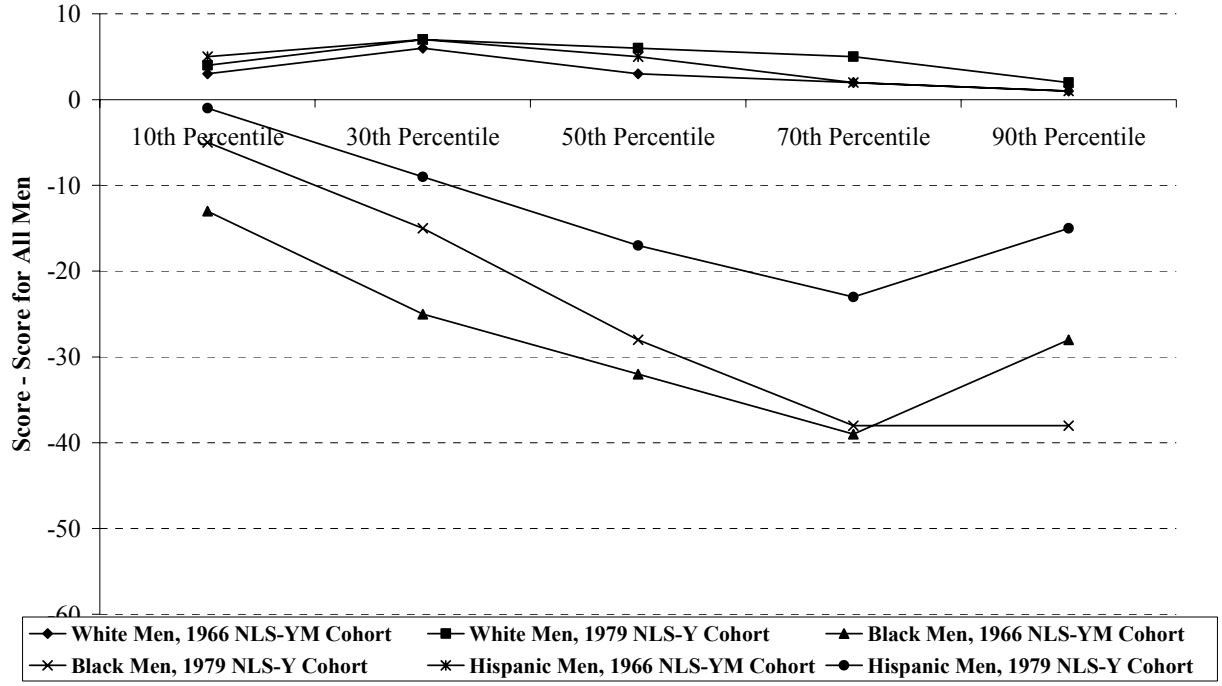

Figure 1B: Deviation of Women's Cohort-Specific IQ/AFQT Distns. from Distns. for All Women

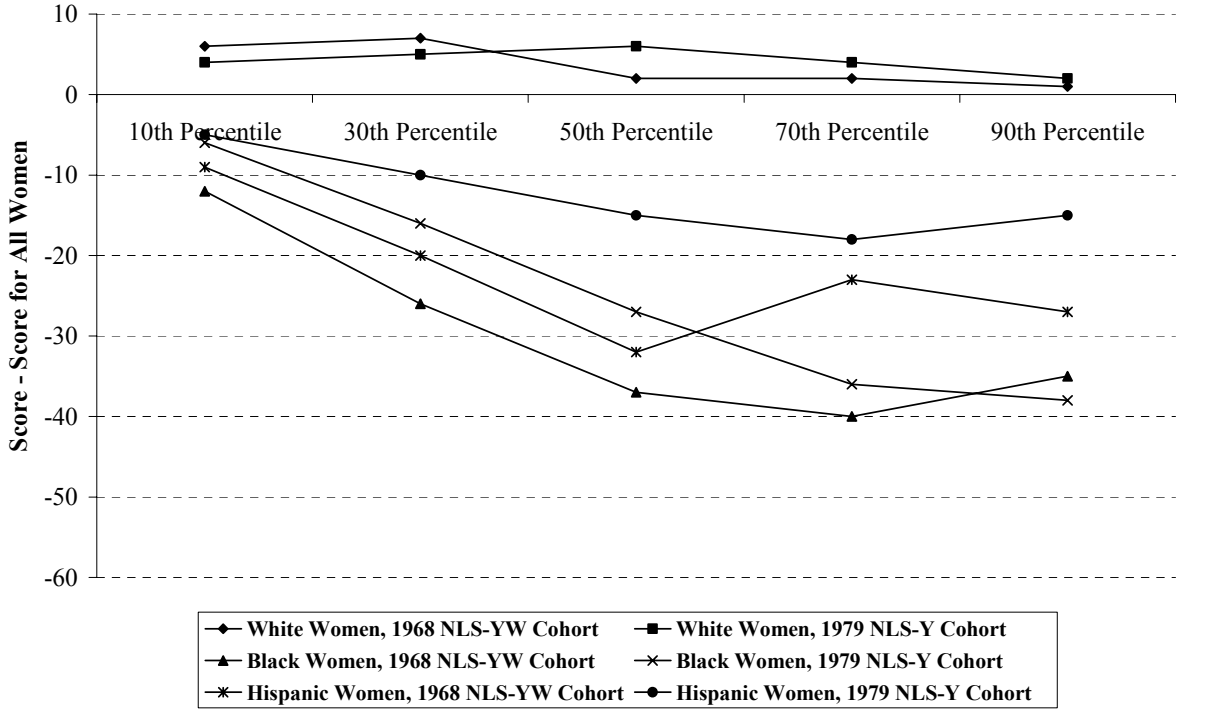

Figure 1C: Deviation of Minority Men's Cohort-Speciific IQ/AFQT Distns. from Distns. for White Men

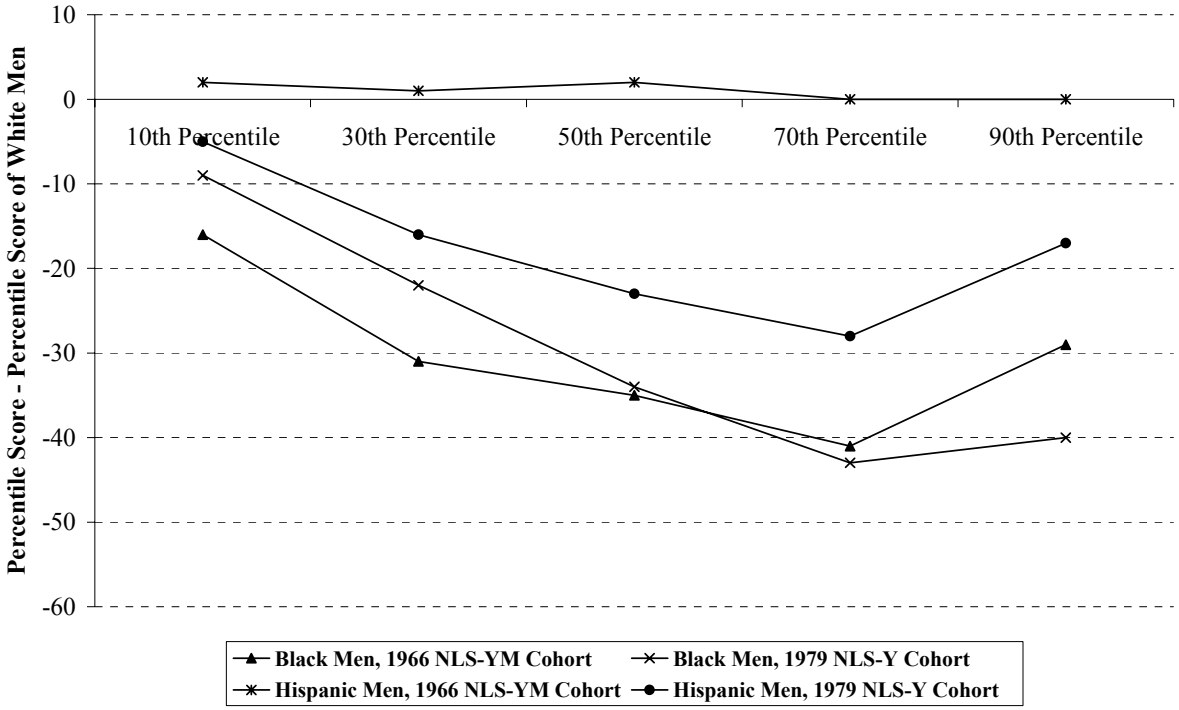

Figure 1D: Deviation of Women's Cohort-Speciific IQ/AFQT Distns. from Distns. for White Men

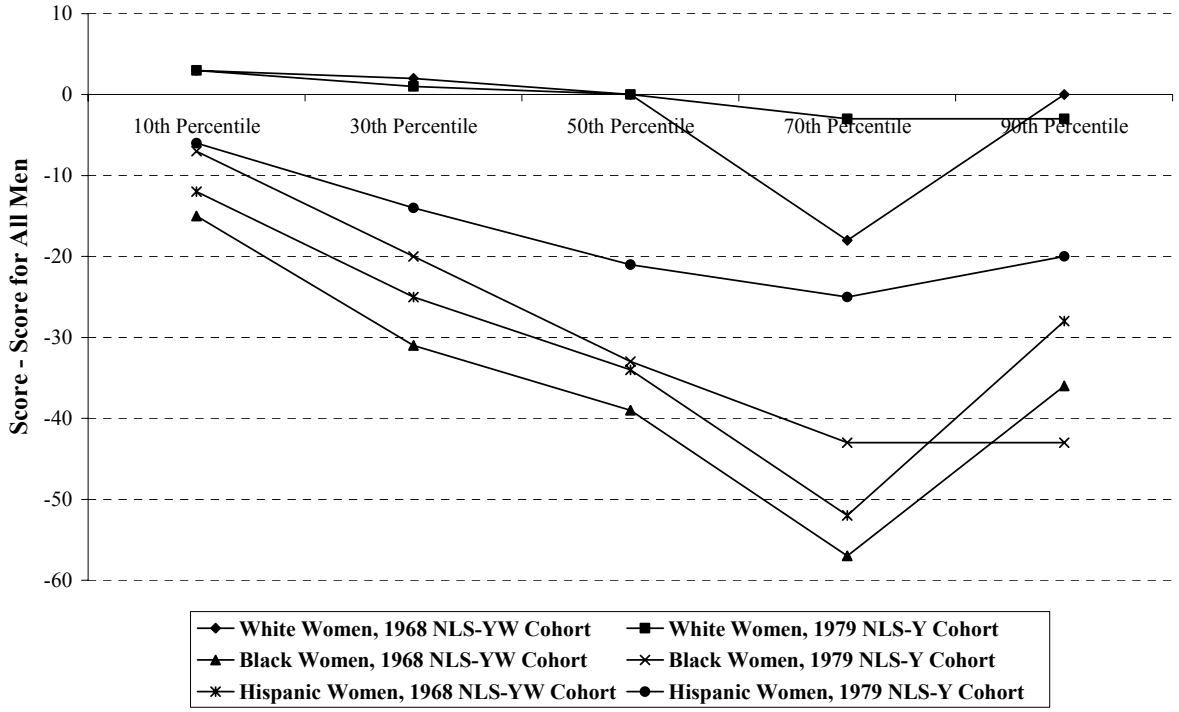

Figure 2A. Unemployment Rate in Young Men's Labor Market of Residence at Different Ages

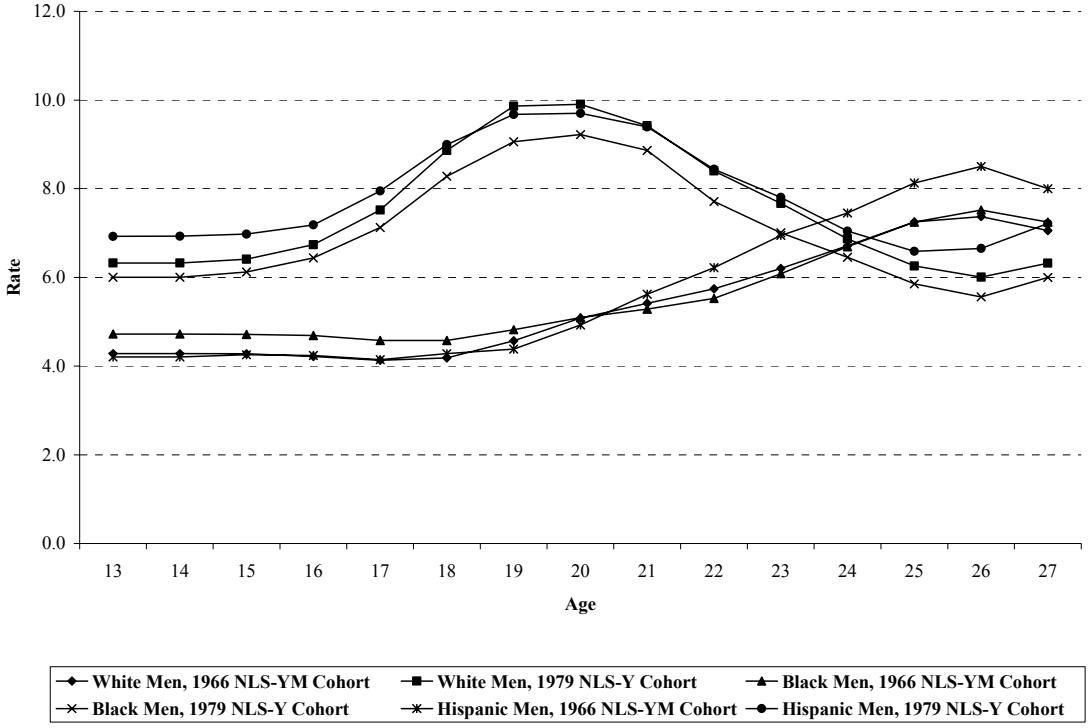

Figure 2B. Unemployment Rate in Young Women's Labor Market of Residence at Different Ages

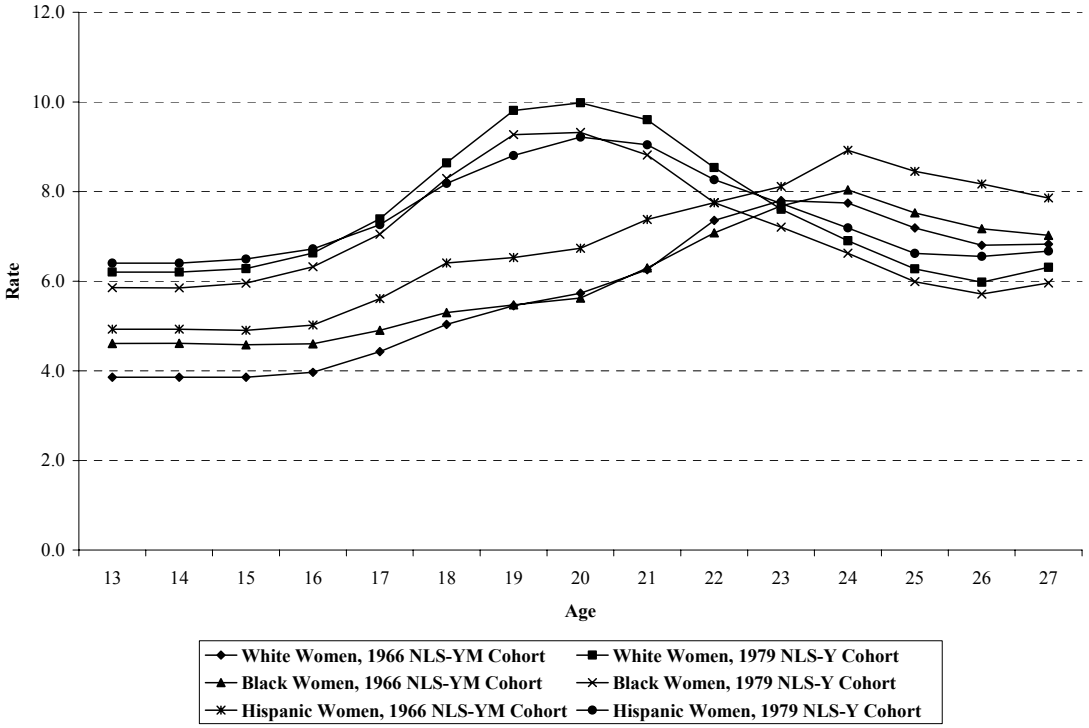

Figure 3A. Size of Labor Force in Young Men's Labor Market of Residence at Different Ages

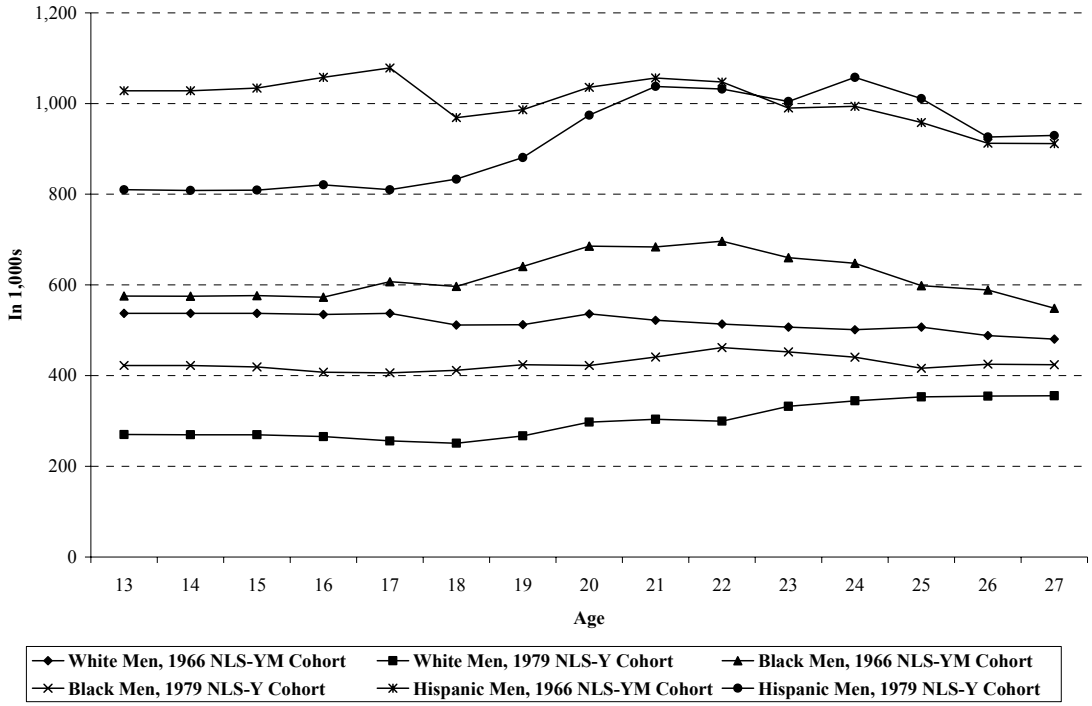

Figure 3B. Size of Labor Force in Young Women's Labor Market of Residence at Different Ages

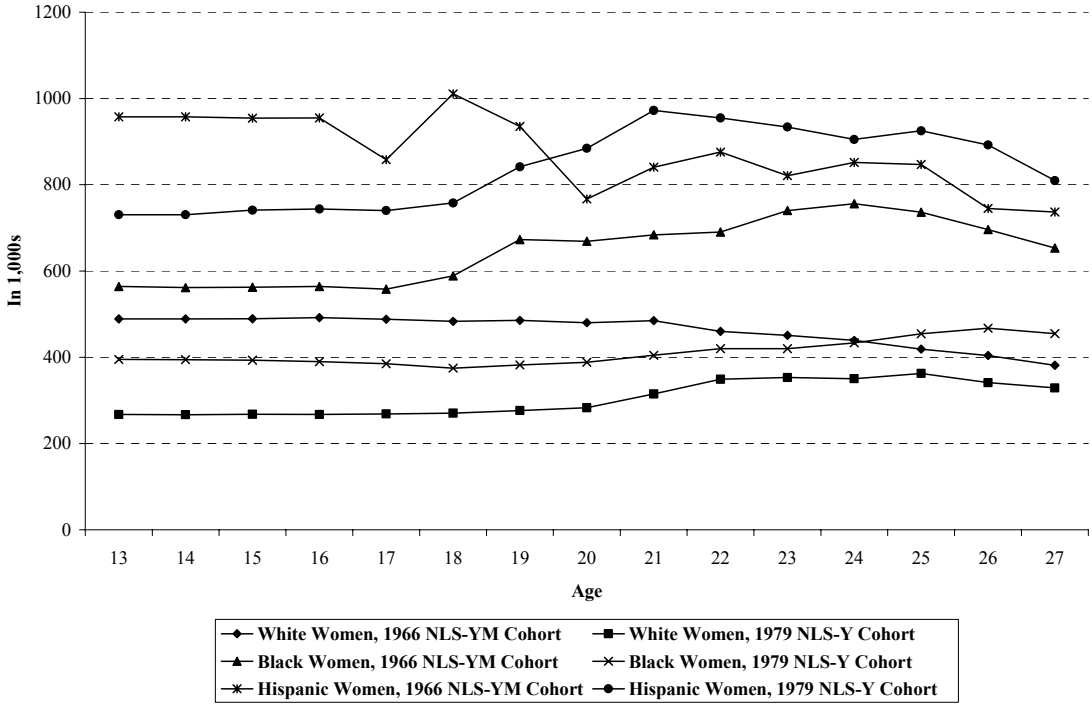

Figure 4A: College Tuition Per Student In Young Men's Region of Residence

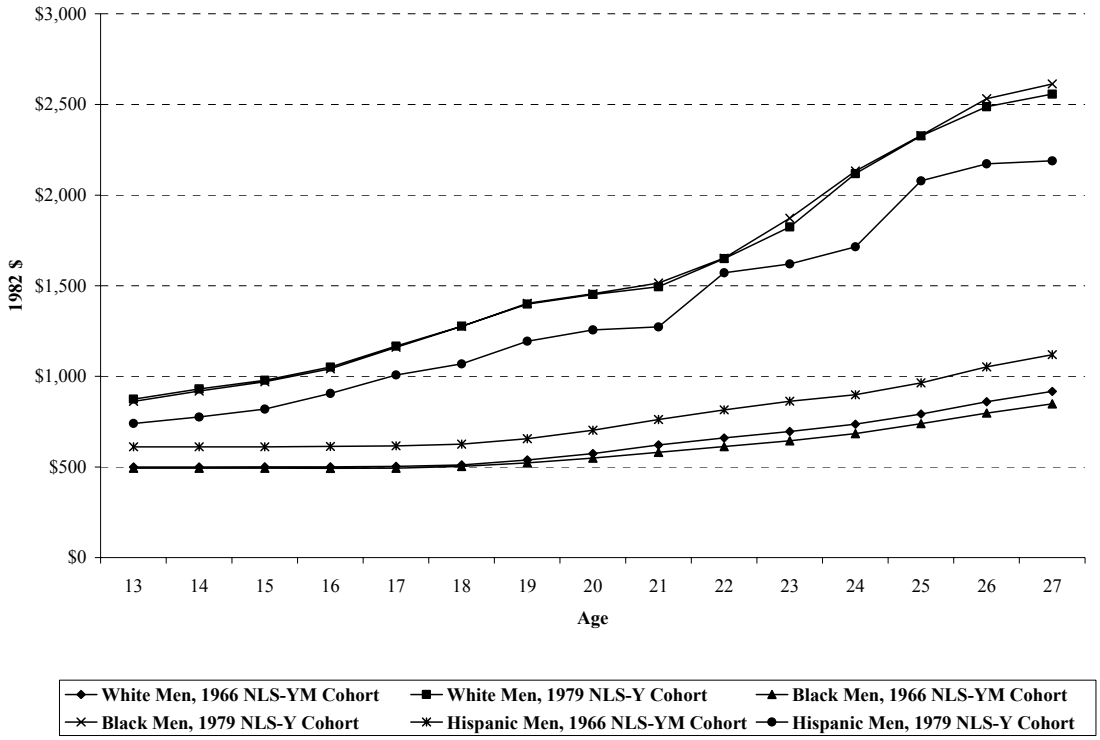

Figure 4B: College Tuition Per Student In Young Women's Region of Residence

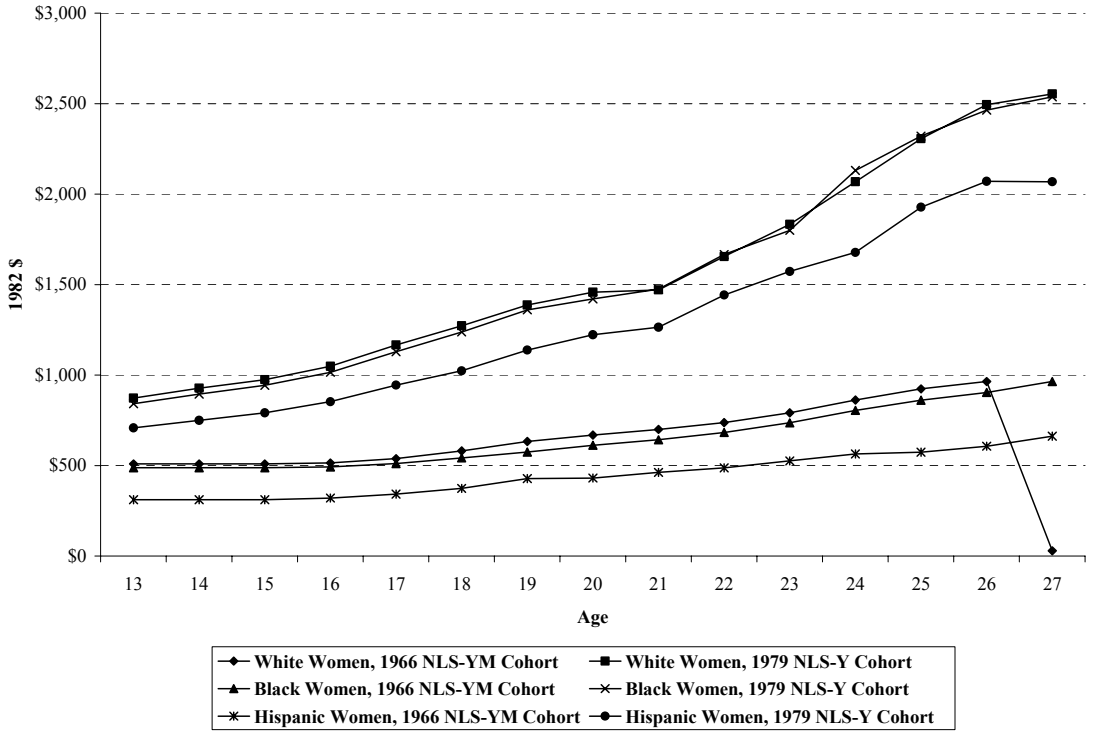

Table 1: Distribution of Activities, Ages 13-27
Panel A: Young Men, 1966 NLS-YM 1966 Cohorts

Age	*Only Attending School*	*Attending School & Working Part-Time*	*Working Part Time (Not In School)*	*Working Fulltime*	*Military*	*Other*	*No. of Obs.*
Whites							
13	79.6%	16.2%	0.4%	0.0%	0.3%	3.6%	1,690
14	66.2%	29.3%	0.6%	0.1%	0.3%	3.6%	1,690
15	56.1%	39.0%	1.4%	0.1%	0.3%	3.2%	1,683
16	46.1%	48.2%	2.0%	0.2%	0.4%	3.1%	1,669
17	35.4%	55.3%	3.0%	0.7%	1.9%	3.7%	1,641
18	27.0%	48.7%	7.5%	4.5%	5.9%	6.4%	1,600
19	16.4%	35.2%	13.1%	13.2%	13.0%	9.2%	1,556
20	7.4%	24.8%	15.7%	20.3%	17.3%	14.5%	1,522
21	5.9%	21.9%	19.3%	23.8%	17.1%	11.9%	1,504
22	4.3%	16.7%	19.9%	29.1%	13.2%	16.8%	1,477
23	3.3%	13.9%	19.5%	37.0%	10.1%	16.3%	1,453
24	3.4%	13.1%	20.2%	44.0%	6.0%	13.3%	1,429
25	2.4%	11.3%	20.8%	49.5%	4.1%	11.9%	1,378
26	1.6%	12.9%	23.5%	50.3%	2.6%	9.1%	1,341
27	1.4%	7.8%	23.7%	53.0%	1.5%	12.6%	1,307
Blacks							
13	85.3%	11.5%	0.3%	0.0%	0.2%	2.9%	823
14	71.3%	25.2%	0.3%	0.0%	0.2%	3.0%	822
15	60.9%	35.2%	0.9%	0.0%	0.2%	2.8%	822
16	48.5%	44.3%	2.2%	0.2%	0.4%	4.5%	816
17	41.1%	45.7%	4.0%	1.8%	1.4%	6.0%	789
18	28.3%	38.5%	11.4%	6.4%	4.5%	10.9%	767
19	14.3%	28.0%	22.2%	11.4%	12.2%	11.9%	722
20	5.9%	18.6%	21.5%	21.1%	17.1%	15.7%	678
21	4.3%	12.2%	24.0%	25.7%	18.1%	15.8%	643
22	2.8%	5.1%	23.2%	32.1%	15.0%	21.8%	602
23	3.3%	7.2%	22.3%	35.7%	10.8%	20.7%	582
24	3.2%	10.1%	21.3%	40.5%	6.3%	18.6%	562
25	1.5%	8.1%	18.9%	47.8%	4.8%	19.0%	539
26	1.7%	6.8%	22.4%	49.4%	3.9%	15.8%	511
27	2.3%	6.9%	22.0%	48.5%	3.0%	17.3%	485
Hispanics							
13	86.8%	9.2%	0.0%	0.0%	0.0%	4.0%	123
14	76.4%	19.6%	0.0%	0.0%	0.0%	4.0%	123
15	60.6%	35.4%	0.0%	0.0%	0.0%	4.0%	122
16	42.5%	51.5%	2.2%	0.0%	0.0%	3.8%	121
17	36.0%	54.5%	3.0%	1.0%	2.2%	3.5%	118
18	27.8%	55.5%	7.4%	2.8%	2.8%	3.7%	117
19	17.2%	44.7%	9.3%	8.5%	12.2%	8.1%	117
20	1.2%	32.4%	19.6%	16.2%	17.2%	13.4%	116
21	7.8%	23.1%	13.6%	31.1%	10.6%	13.8%	114
22	7.6%	13.9%	24.5%	31.0%	7.4%	15.5%	112
23	3.7%	20.0%	18.6%	37.8%	4.8%	15.1%	111
24	4.1%	16.4%	22.6%	43.9%	2.3%	10.7%	106
25	0.0%	15.1%	17.0%	49.7%	4.3%	13.9%	103
26	4.3%	10.7%	18.7%	59.5%	2.5%	4.3%	98
27	3.3%	12.2%	22.0%	55.6%	1.3%	5.7%	96

Table 1: (Cont.)
Panel B: Young Men, 1979 NLS-Y Cohorts

Age	*Only Attending School*	*Attending School & Working Part-Time*	*Working Part Time (Not In School)*	*Working Fulltime*	*Military*	*Other*	*No. of Obs.*
Whites							
13	98.3%	1.4%	0.0%	0.1%	0.0%	0.3%	1,802
14	91.3%	8.1%	0.2%	0.1%	0.0%	0.3%	1,802
15	66.7%	32.3%	0.6%	0.0%	0.0%	0.4%	1,801
16	35.4%	60.7%	1.8%	0.4%	0.6%	1.1%	1,797
17	19.4%	69.7%	4.0%	2.2%	3.2%	1.6%	1,796
18	11.4%	61.6%	9.9%	7.0%	7.7%	2.4%	1,790
19	6.5%	42.7%	19.0%	18.6%	10.0%	3.2%	1,784
20	4.5%	36.9%	17.9%	26.0%	10.4%	4.4%	1,781
21	5.5%	30.3%	16.0%	34.1%	10.2%	3.8%	1,778
22	4.7%	23.9%	17.7%	40.1%	9.6%	3.9%	1,766
23	3.0%	17.7%	18.2%	50.2%	7.4%	3.5%	1,752
24	1.8%	14.7%	15.0%	58.8%	6.4%	3.4%	1,743
25	1.5%	13.6%	14.4%	62.1%	6.2%	2.3%	1,726
26	0.9%	11.8%	13.0%	66.9%	4.6%	2.8%	1,672
27	1.0%	10.6%	13.2%	68.1%	4.4%	2.7%	1,561
Blacks							
13	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	759
14	91.0%	8.9%	0.1%	0.0%	0.0%	0.0%	759
15	72.8%	26.4%	0.1%	0.1%	0.0%	0.7%	759
16	48.8%	48.1%	1.2%	0.1%	0.1%	1.7%	759
17	33.8%	56.3%	3.1%	0.9%	3.5%	2.3%	759
18	20.6%	50.2%	8.9%	3.7%	11.3%	5.2%	759
19	14.0%	32.4%	16.8%	12.3%	13.8%	10.6%	756
20	9.0%	23.3%	25.9%	19.6%	12.6%	9.7%	754
21	6.3%	17.3%	26.1%	27.0%	12.5%	10.8%	751
22	6.1%	13.5%	24.7%	33.9%	12.8%	9.0%	747
23	3.8%	11.7%	23.9%	39.1%	9.6%	11.9%	744
24	1.6%	9.2%	26.4%	44.7%	8.9%	9.1%	733
25	1.6%	8.1%	23.6%	48.9%	7.4%	10.3%	729
26	1.3%	6.3%	25.8%	51.9%	6.2%	8.4%	720
27	1.9%	6.0%	21.9%	54.7%	5.4%	10.1%	713
Hispanics							
13	97.2%	1.8%	0.0%	0.0%	0.0%	0.9%	272
14	89.9%	8.6%	0.6%	0.0%	0.0%	0.9%	272
15	65.6%	31.9%	0.6%	0.4%	0.0%	1.6%	272
16	35.8%	59.2%	4.0%	0.5%	0.0%	0.5%	271
17	21.6%	65.8%	6.7%	2.4%	1.0%	2.5%	271
18	18.3%	54.3%	10.3%	7.9%	5.4%	3.7%	271
19	9.6%	41.5%	20.1%	15.8%	6.2%	6.7%	268
20	8.8%	32.3%	21.7%	25.2%	7.1%	4.9%	267
21	7.7%	24.1%	21.0%	36.1%	6.1%	5.0%	267
22	6.9%	23.4%	22.9%	38.5%	4.3%	4.1%	267
23	7.9%	14.7%	19.8%	47.0%	7.0%	3.6%	265
24	3.1%	15.2%	23.0%	51.3%	5.4%	2.0%	263
25	1.5%	11.4%	23.2%	57.1%	5.2%	1.5%	259
26	1.2%	11.6%	23.0%	58.3%	3.8%	2.1%	259
27	2.1%	12.7%	18.3%	58.9%	3.3%	4.8%	257

Table 1: (Cont.)
Panel C: Young Women, 1968 NLS-YW Cohorts

Age	*Only Attending School*	*Attending School & Working Part-Time*	*Working Part Time (Not In School)*	*Working Fulltime*	*Military*	*Other*	*No. of Obs.*
Whites							
13	96.1%	3.5%	0.0%	0.0%	n.a.	0.4%	1,329
14	93.1%	6.6%	0.0%	0.0%	n.a.	0.3%	1,329
15	84.7%	14.1%	0.0%	0.0%	n.a.	1.2%	1,329
16	61.7%	33.9%	1.9%	0.1%	n.a.	2.5%	1,323
17	40.9%	52.5%	2.9%	0.5%	n.a.	3.2%	1,308
18	21.8%	53.1%	10.5%	4.8%	n.a.	9.9%	1,288
19	12.7%	36.2%	21.5%	9.7%	n.a.	19.9%	1,251
20	15.7%	21.1%	17.5%	12.0%	n.a.	33.7%	1,224
21	16.7%	10.0%	18.1%	11.4%	n.a.	43.7%	1,197
22	11.3%	8.0%	16.4%	11.6%	n.a.	52.7%	1,161
23	6.7%	3.3%	16.5%	14.9%	n.a.	58.6%	1,135
24	5.6%	3.8%	17.5%	12.8%	n.a.	60.2%	1,117
25	5.1%	3.2%	16.4%	9.4%	n.a.	66.0%	1,095
26	3.2%	3.0%	14.7%	8.0%	n.a.	71.1%	1,080
27	5.0%	2.0%	13.5%	7.3%	n.a.	72.2%	1,054
Blacks							
13	98.0%	1.1%	0.0%	0.0%	n.a.	0.9%	633
14	94.5%	3.6%	0.0%	0.0%	n.a.	1.9%	633
15	87.3%	9.6%	0.1%	0.1%	n.a.	2.9%	633
16	66.1%	22.9%	4.4%	0.3%	n.a.	6.3%	631
17	43.3%	40.7%	6.5%	0.8%	n.a.	8.6%	623
18	25.4%	40.4%	16.2%	2.9%	n.a.	15.1%	613
19	19.9%	23.4%	21.4%	8.0%	n.a.	27.2%	600
20	16.3%	12.3%	21.3%	10.7%	n.a.	39.5%	587
21	12.2%	9.2%	16.7%	10.2%	n.a.	51.7%	571
22	11.8%	5.3%	15.0%	10.8%	n.a.	57.1%	559
23	4.3%	4.1%	18.4%	11.7%	n.a.	61.5%	540
24	8.9%	3.3%	14.5%	10.1%	n.a.	63.1%	528
25	6.6%	3.3%	13.7%	6.6%	n.a.	69.8%	511
26	4.6%	2.5%	13.4%	5.3%	n.a.	74.2%	498
27	4.7%	0.8%	13.8%	5.7%	n.a.	75.0%	485
Hispanics							
13	100.0%	0.0%	0.0%	0.0%	n.a.	0.0%	49
14	100.0%	0.0%	0.0%	0.0%	n.a.	0.0%	49
15	81.3%	18.7%	0.0%	0.0%	n.a.	0.0%	49
16	54.7%	39.5%	2.7%	0.0%	n.a.	3.0%	49
17	29.9%	54.4%	7.6%	0.0%	n.a.	8.1%	48
18	15.8%	42.8%	14.8%	7.5%	n.a.	19.1%	48
19	13.5%	27.9%	17.7%	7.2%	n.a.	33.8%	48
20	13.9%	8.2%	22.7%	12.9%	n.a.	42.3%	47
21	4.5%	3.9%	19.6%	11.3%	n.a.	60.8%	46
22	9.6%	2.2%	12.3%	10.2%	n.a.	65.7%	46
23	10.8%	7.1%	19.8%	11.4%	n.a.	50.8%	44
24	2.1%	4.2%	24.2%	8.9%	n.a.	60.6%	44
25	5.3%	2.1%	25.9%	9.5%	n.a.	57.2%	41
26	2.2%	7.1%	23.3%	15.5%	n.a.	52.0%	39
27	2.6%	4.5%	17.6%	7.9%	n.a.	67.3%	39

Table 1: (Cont.)
Panel D: Young Women, 1979 NLS-Y Cohorts

Age	*Only Attending School*	*Attending School & Working Part-Time*	*Working Part Time (Not In School)*	*Working Fulltime*	*Military*	*Other*	*No. of Obs.*
Whites							
13	98.9%	0.6%	0.0%	0.1%	0.0%	0.4%	1,742
14	92.8%	6.7%	0.0%	0.0%	0.0%	0.5%	1,742
15	71.2%	27.2%	0.4%	0.0%	0.0%	1.2%	1,741
16	40.7%	55.1%	1.8%	0.3%	0.0%	2.1%	1,740
17	25.0%	65.5%	5.0%	0.8%	0.0%	3.7%	1,736
18	13.2%	61.2%	13.2%	6.3%	0.3%	5.9%	1,735
19	8.2%	43.0%	22.6%	16.0%	0.8%	9.5%	1,729
20	6.7%	34.8%	23.0%	23.0%	1.1%	11.4%	1,722
21	5.7%	31.7%	23.5%	27.2%	0.8%	11.1%	1,712
22	3.7%	24.0%	26.8%	32.8%	0.9%	11.8%	1,707
23	2.5%	17.5%	28.2%	39.0%	1.1%	11.5%	1,695
24	2.0%	13.6%	26.3%	45.2%	0.9%	12.0%	1,683
25	1.5%	13.8%	26.9%	45.0%	0.8%	11.9%	1,673
26	1.3%	12.8%	27.6%	45.6%	0.8%	11.8%	1,627
27	1.4%	11.5%	25.7%	46.8%	0.7%	13.9%	1,524
Blacks							
13	99.1%	0.5%	0.0%	0.0%	0.0%	0.4%	695
14	94.0%	5.7%	0.0%	0.0%	0.0%	0.4%	695
15	79.3%	19.9%	0.0%	0.0%	0.0%	0.8%	695
16	63.0%	34.3%	0.6%	0.1%	0.0%	1.9%	694
17	48.9%	43.6%	2.4%	0.4%	0.5%	4.2%	693
18	35.7%	44.0%	6.7%	1.7%	1.7%	10.3%	690
19	20.9%	34.1%	16.8%	5.2%	1.7%	21.4%	688
20	11.2%	29.9%	22.3%	10.1%	1.7%	24.7%	688
21	8.4%	24.7%	24.6%	16.8%	2.3%	23.2%	687
22	6.7%	18.2%	26.3%	21.6%	1.9%	25.3%	686
23	4.4%	15.7%	28.7%	27.0%	1.5%	22.8%	681
24	3.3%	12.2%	24.0%	35.9%	1.5%	23.0%	677
25	3.1%	10.9%	26.5%	38.3%	0.7%	20.6%	673
26	2.0%	10.5%	24.8%	41.5%	0.8%	20.2%	664
27	1.5%	9.9%	25.3%	43.0%	0.7%	19.6%	656
Hispanics							
13	98.8%	0.7%	0.0%	0.0%	0.0%	0.5%	291
14	93.5%	5.8%	0.0%	0.4%	0.0%	0.3%	291
15	77.0%	21.6%	0.6%	0.2%	0.0%	0.6%	291
16	58.0%	36.7%	3.8%	0.2%	0.0%	1.2%	291
17	31.7%	56.1%	5.5%	1.9%	0.0%	4.8%	291
18	17.6%	58.5%	9.1%	5.6%	1.3%	8.0%	291
19	13.1%	46.7%	18.5%	10.9%	1.8%	9.0%	290
20	9.4%	39.0%	23.6%	15.4%	1.8%	10.8%	289
21	7.0%	32.0%	20.8%	23.9%	1.3%	15.0%	288
22	5.4%	25.4%	24.3%	29.2%	1.5%	14.1%	288
23	3.7%	13.8%	25.1%	38.5%	0.9%	17.9%	287
24	3.9%	16.1%	25.5%	37.6%	2.3%	14.7%	283
25	1.6%	10.9%	24.7%	44.9%	1.2%	16.8%	281
26	3.8%	11.6%	24.3%	42.9%	1.5%	16.0%	280
27	4.4%	10.4%	21.1%	48.6%	1.0%	14.5%	275

Table 2: Schooling, Work, Military and Other Activity Experiences

Panel A: Young Men

Characteristics	Whites			Blacks			Hispanics			All Groups		
	1966 NLS-YM Coh.	*1979 NLS-Y Coh.*	*Diff.*[1]	*1966 NLS-YM Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]	*1966 NLS-YM Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]	*1966 NLS-YM Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]
Fraction Ever Having Experienced by Age 27:												
Graduated from High School	0.905	0.867	-0.04	0.75	0.827	0.08	0.933	0.773	-0.16	0.891	0.857	-0.03
			-4.2%			*10.3%*			*-17.1%*			*-3.8%*
Attended College	0.58	0.447	-0.13	0.413	0.307	-0.11	0.699	0.367	-0.33	0.57	0.423	-0.15
			-22.9%			*-25.7%*			*-47.5%*			*-25.8%*
Graduated from College	0.287	0.251	-0.04	0.124	0.104	-0.02	0.359	0.168	-0.19	0.275	0.226	-0.05
			-12.5%			*-16.1%*			*-53.2%*			*-17.8%*
Worked, Any type of Employment	0.998	0.994	0.00	1.00	0.988	-0.01	1.00	1.00	0.00	0.998	0.993	-0.01
			-0.4%			*-1.2%*			*0.0%*			*-0.5%*
Worked while in School	0.97	0.949	-0.02	0.939	0.894	-0.04	0.967	0.962	-0.01	0.967	0.942	-0.03
			-2.2%			*-4.8%*			*-0.5%*			*-2.6%*
Worked while in High School	0.873	0.906	0.03	0.813	0.823	0.01	0.863	0.909	0.05	0.866	0.894	0.03
			3.8%			*1.2%*			*5.3%*			*3.2%*
Worked while in College, given attended College	0.874	0.871	0.00	0.724	0.794	0.07	0.857	0.943	0.09	0.861	0.866	0.01
			-0.3%			*9.7%*			*10.0%*			*0.6%*
Worked Part-Time (& Not in School)	0.719	0.639	-0.08	0.754	0.755	0.00	0.73	0.728	0.00	0.723	0.659	-0.06
			-11.1%			*0.1%*			*-0.3%*			*-8.9%*
Worked Full Time	0.798	0.897	0.10	0.756	0.813	0.06	0.834	0.858	0.02	0.796	0.883	0.09
			12.4%			*7.5%*			*2.9%*			*10.9%*
In Military	0.329	0.177	-0.15	0.344	0.217	-0.13	0.312	0.119	-0.19	0.329	0.18	-0.15
			-46.2%			*-36.9%*			*-61.9%*			*-45.3%*
Other Non-School, Non-Work Activity	0.591	0.22	-0.37	0.627	0.444	-0.18	0.555	0.36	-0.20	0.593	0.258	-0.34
			-62.8%			*-29.2%*			*-35.1%*			*-56.5%*

[1]The entries for a particular variable are as follows: the first row gives the raw difference between 1979 and 1968 and the second row entry gives the percentage changes from 1968 to 1979.

Table 2: (Cont.)

Panel A: Young Men (Cont.)

	Whites			Blacks			Hispanics			All Groups		
Characteristics	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]
Number of Years of Experience by Age 27:												
Years Attended School since Age 13	7.511	7.843	0.33	6.784	7.292	0.51	7.986	7.761	-0.23	7.467	7.761	0.29
			4.4%			*7.5%*			*-2.8%*			*3.9%*
Highest Grade Completed	13.668	13.202	-0.47	12.501	12.445	-0.06	14.251	12.602	-1.65	13.586	13.069	-0.52
			-3.4%			*-0.4%*			*-11.6%*			*-3.8%*
Work, Any type of Employment	9.153	10.216	1.06	8.407	8.773	0.37	9.289	10.136	0.85	9.085	10.007	0.92
			11.6%			*4.4%*			*9.1%*			*10.1%*
Work while in School	4.012	4.308	0.30	3.1	3.17	0.07	4.151	4.023	-0.13	3.928	4.134	0.21
			7.4%			*2.3%*			*-3.1%*			*5.2%*
Work while in High School	2.158	2.573	0.42	1.827	2.036	0.21	2.042	2.404	0.36	2.117	2.489	0.37
			19.2%			*11.4%*			*17.7%*			*17.6%*
Work while in College (All respondents)	1.372	1.373	0.00	0.678	0.71	0.03	1.825	1.11	-0.72	1.33	1.267	-0.06
			0.1%			*4.7%*			*-39.2%*			*-4.7%*
Work while in College, given attended College	2.368	3.075	0.71	1.642	2.313	0.67	2.61	3.019	0.41	2.333	2.994	0.66
			29.9%			*40.9%*			*15.7%*			*28.3%*
Work Part-Time (& Not in School)	1.778	1.616	-0.16	1.88	2.299	0.42	1.576	2.151	0.58	1.776	1.736	-0.04
			-9.1%			*22.3%*			*36.5%*			*-2.3%*
Work Full Time	3.362	4.292	0.93	3.427	3.304	-0.12	3.562	3.962	0.40	3.381	4.137	0.76
			27.7%			*-3.6%*			*11.2%*			*22.4%*
Military Service	1.011	0.803	-0.21	1.144	1.003	-0.14	0.743	0.552	-0.19	1.007	0.821	-0.19
			-20.6%			*-12.3%*			*-25.7%*			*-18.5%*
Other Non-School, Non-Work Activity	1.338	0.447	-0.89	1.764	1.102	-0.66	1.133	0.574	-0.56	1.368	0.546	-0.82
			-66.6%			*-37.5%*			*-49.3%*			*-60.1%*

[1]The entries for a particular variable are as follows: the first row gives the raw difference between 1979 and 1968 and the second row entry gives the percentage changes from 1968 to 1979.

Table 2: (Cont.)

Panel B: Young Women

Characteristics	Whites			Blacks			Hispanics			All Groups		
	1968 NLS-YW Coh.	*1979 NLS-Y Coh.*	*Diff.*[1]	*1968 NLS-YW Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]	*1968 NLS-YW Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]	*1968 NLS-YW Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]
Fraction Ever Having Experienced by Age 27:												
Graduated from High School	0.859	0.905	0.05	0.706	0.86	0.15	0.614	0.835	0.22	0.832	0.895	0.06
			5.4%			*21.8%*			*36.0%*			*7.6%*
Attended College	0.428	0.46	0.03	0.311	0.403	0.09	0.233	0.438	0.21	0.407	0.451	0.04
			7.5%			*29.6%*			*88.0%*			*10.8%*
Graduated from College	0.247	0.257	0.01	0.133	0.126	-0.01	0.027	0.153	0.13	0.226	0.235	0.01
			4.0%			*-5.3%*			*466.7%*			*4.0%*
Worked, Any type of Employment	0.959	0.997	0.04	0.937	0.965	0.03	0.971	0.991	0.02	0.957	0.992	0.04
			4.0%			*3.0%*			*2.1%*			*3.7%*
Worked while in School	0.868	0.937	0.07	0.756	0.831	0.08	0.864	0.918	0.05	0.854	0.922	0.07
			7.9%			*9.9%*			*6.3%*			*8.0%*
Worked while in High School	0.831	0.905	0.07	0.697	0.778	0.08	0.781	0.865	0.08	0.813	0.886	0.07
			8.9%			*11.6%*			*10.8%*			*9.0%*
Worked while in College, given attended College	0.708	0.902	0.19	0.542	0.818	0.28	0.422	0.892	0.47	0.686	0.892	0.21
			27.4%			*50.9%*			*111.4%*			*30.0%*
Worked Part-Time (& Not in School)	0.742	0.796	0.05	0.743	0.776	0.03	0.756	0.791	0.04	0.743	0.793	0.05
			7.3%			*4.4%*			*4.6%*			*6.7%*
Worked Full Time	0.448	0.819	0.37	0.397	0.702	0.31	0.503	0.8	0.30	0.444	0.802	0.36
			82.8%			*76.8%*			*59.0%*			*80.6%*
In Military	n.a.	0.021	n.a.	n.a.	0.038		0	0.039		n.a.	0.025	
Other Non-School, Non-Work Activity	0.947	0.385	-0.56	0.977	0.581	-0.40	1	0.467	-0.53	0.952	0.415	-0.54
			-59.3%			*-40.5%*			*-53.3%*			*-56.4%*

[1]The entries for a particular variable are as follows: the first row gives the raw difference between 1979 and 1968 and the second row entry gives the percentage changes from 1968 to 1979.

Table 2: (Cont.)

Panel B: Young Women (Cont.)

	Whites			Blacks			Hispanics			All Groups		
Characteristics	***1968 NLS-YW Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1968 NLS-YW Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1968 NLS-YW Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1968 NLS-YW Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]
Number of Years of Experience by Age 27:												
Years Attended School since Age 13	7.416	7.92	0.51	6.956	7.89	0.93	6.68	8.02	1.34	7.334	7.92	0.59
			6.8%			*13.4%*			*20.1%*			*8.0%*
Highest Grade Completed	13.149	13.29	0.15	12.156	12.79	0.63	11.456	12.73	1.27	12.969	13.20	0.23
			1.1%			*5.2%*			*11.1%*			*1.8%*
Work, Any type of Employment	5.493	9.98	4.49	4.648	7.82	3.17	5.281	9.06	3.77	5.381	9.65	4.27
			81.8%			*68.3%*			*71.5%*			*79.3%*
Work while in School	2.673	4.19	1.52	1.924	3.11	1.19	2.146	3.78	1.63	2.562	4.03	1.46
			56.8%			*61.6%*			*76.0%*			*57.1%*
Work while in High School	1.985	2.53	0.54	1.462	1.90	0.44	1.931	2.20	0.27	1.918	2.43	0.51
			27.4%			*29.8%*			*14.0%*			*26.6%*
Work while in College (All respondents)	0.574	1.42	0.85	0.315	1.01	0.69	0.098	1.31	1.21	0.526	1.36	0.84
			148.1%			*219.0%*			*1231.6%*			*158.9%*
Work while in College, given attended College	1.343	3.10	1.76	1.012	2.49	1.48	0.422	2.98	2.56	1.294	3.02	1.73
			130.7%			*146.1%*			*606.6%*			*133.3%*
Work Part-Time (& Not in School)	1.734	2.51	0.77	1.815	2.31	0.49	2.099	2.27	0.17	1.756	2.47	0.71
			44.6%			*27.1%*			*7.9%*			*40.6%*
Work Full Time	1.087	3.29	2.20	0.909	2.40	1.50	1.036	3.01	1.98	1.064	3.15	2.09
			202.3%			*164.5%*			*190.7%*			*196.4%*
Military Service	n.a.	0.08		n.a.	0.14		n.a.	0.15		n.a.	0.09	
Other Non-School, Non-Work Activity	4.763	1.20	-3.56	5.32	2.26	-3.06	5.186	1.55	-3.64	4.847	1.36	-3.49
			-74.7%			*-57.6%*			*-70.1%*			*-71.9%*

[1]The entries for a particular variable are as follows: the first row gives the raw difference between 1979 and 1968 and the second row entry gives the percentage changes from 1968 to 1979.

Table 3: Descriptive Statistics on Personal and Family Background Characteristics

Panel A: Young Men

	Whites			Blacks			Hispanics			All Groups		
Characteristics	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]
Young Men												
IQ/AFQT Percentile Score	57.54	49.03	-8.50	27.09	20.36	-6.73	58.00	31.72	-26.28	54.99	44.26	-10.73
	(26.90)	(28.43)	*-14.8%*	(21.74)	(19.68)	*-24.8%*	(25.88)	(25.76)	*-45.3%*	(27.75)	(29.12)	*-19.5%*
Missing IQ/AFQT Percentile Score	0.31	0.05	-0.26	0.57	0.04	-0.53	0.28	0.06	-0.22	0.34	0.04	-0.30
			-85.4%			*-93.5%*			*-79.7%*			*-87.0%*
Father's Highest Grade Completed	10.98	12.28	1.30	7.80	10.59	2.80	10.24	9.52	-0.72	10.64	11.97	1.33
	(3.49)	(3.37)	*11.9%*	(3.70)	(3.13)	*35.9%*	(2.84)	(5.43)	*-7.0%*	(3.59)	(3.53)	*12.5%*
Missing Father's Highest Grade Completed	0.11	0.08	-0.03	0.40	0.26	-0.15	0.09	0.17	0.08	0.15	0.11	-0.04
			-30.6%			*-36.3%*			*82.6%*			*-27.9%*
Mother's Highest Grade Completed	11.05	11.86	0.81	9.00	11.10	2.11	10.46	8.69	-1.77	10.78	11.63	0.85
	(2.80)	(2.53)	*7.4%*	(2.99)	(2.46)	*23.4%*	(2.45)	(4.89)	*-16.9%*	(2.88)	(2.73)	*7.9%*
Missing Mother's Highest Grade Completed	0.06	0.05	-0.01	0.19	0.09	-0.10	0.05	0.11	0.07	0.07	0.06	-0.02
			-14.3%			*-51.9%*			*148.9%*			*-20.8%*
Living with Mother at Age 14	0.95	0.94	-0.01	0.86	0.90	0.04	0.96	0.94	-0.02	0.94	0.93	-0.01
	(0.21)	(0.24)	*-1.5%*	(0.35)	(0.30)	*4.5%*	(0.20)	(0.24)	*-1.8%*	(0.24)	(0.25)	*-0.9%*
Number of Persons	1690	1802		823	759		123	272		2636	2833	

NOTES: Standard deviations in parentheses.

[1]The entries for a particular variable are as follows: the first row gives the raw difference between 1979 and 1966 and the second row entry gives the percentage changes from 1966 to 1979.

Table 3: (Cont.)

Panel B: Young Women

Characteristics	Whites			Blacks			Hispanics			All Groups		
	1968 NLS-YW Coh.	***1979 NLS-Y Coh.***	***Diff.***[1]	***1968 NLS-YW Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1968 NLS-YW Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]	***1968 NLS-YW Coh.***	***1979 NLS-Y Coh.***	***Diff.***[1]
IQ/AFQT Percentile Score	58.48	48.59	-9.89	26.15	20.98	-5.17	34.08	32.57	-1.52	55.02	44.12	-10.91
	(26.34)	(26.09)	*-16.9%*	(22.49)	(18.33)	*-19.8%*	(23.20)	(24.33)	*-4.4%*	(27.70)	(26.93)	*-19.8%*
Missing IQ/AFQT Percentile Score	0.40	0.05	-0.35	0.62	0.03	-0.60	0.51	0.03	-0.48	0.43	0.04	-0.39
			-88.6%			*-95.8%*			*-94.7%*			*-90.2%*
Father's Highest Grade Completed	11.45	12.19	0.74	8.12	10.33	2.22	7.34	9.41	2.07	11.03	11.86	0.83
	(3.29)	(3.31)	*6.4%*	(3.59)	(3.45)	*27.3%*	(5.01)	(4.88)	*28.2%*	(3.56)	(3.49)	*7.6%*
Missing Father's Highest Grade Completed	0.13	0.08	-0.06	0.42	0.26	-0.16	0.30	0.13	-0.17	0.18	0.11	-0.07
			-41.0%			*-38.8%*			*-57.1%*			*-40.3%*
Mother's Highest Grade Completed	11.38	11.86	0.48	9.26	10.89	1.63	7.15	8.36	1.21	10.99	11.58	0.59
	(2.61)	(2.47)	*4.2%*	(2.85)	(2.57)	*17.6%*	(3.97)	(4.11)	*17.0%*	(2.86)	(2.68)	*5.4%*
Missing Mother's Highest Grade Completed	0.06	0.04	-0.02	0.15	0.07	-0.08	0.06	0.04	-0.02	0.07	0.04	-0.03
			-31.6%			*-54.5%*			*-37.5%*			*-36.8%*
Living with Mother at Age 14	0.95	0.96	0.00	0.88	0.90	0.02	1.00	0.96	-0.04	0.95	0.95	0.00
	(0.21)	(0.21)	*0.2%*	(0.32)	(0.30)	*2.4%*	(0.00)	(0.20)	*-4.0%*	(0.23)	(0.22)	*0.3%*
Number of Persons	1329	1742		633	695		49	291		2011	2728	

NOTES: Standard deviations in parentheses.

[1]The entries for a particular variable are as follows: the first row gives the raw difference between 1979 and 1968 and the second row entry gives the percentage changes from 1968 to 1979.

Table 4: Hourly Wage Rates by Age (16-27), Gender and Cohort

Panel A: Young Men

	Whites			Blacks			Hispanics			All Groups		
Age	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***	***1966 NLS-YM Coh.***	***1979 NLS-Y Coh.***	***Diff.***
16	$4.64	$4.01	-$0.64	$4.71	$4.06	-$0.65	$4.62	$4.13	-$0.49	$4.65	$4.02	-$0.63
17	$5.48	$4.28	-$1.20	$5.44	$4.15	-$1.29	$5.44	$3.94	-$1.50	$5.47	$4.25	-$1.22
18	$6.07	$4.48	-$1.59	$6.26	$4.16	-$2.09	$6.19	$4.75	-$1.44	$6.10	$4.45	-$1.65
19	$6.89	$4.80	-$2.08	$6.67	$4.23	-$2.44	$6.52	$4.94	-$1.58	$6.83	$4.74	-$2.09
20	$7.68	$4.87	-$2.81	$7.12	$4.40	-$2.72	$7.74	$4.80	-$2.94	$7.62	$4.81	-$2.80
21	$8.50	$5.29	-$3.21	$7.74	$4.64	-$3.10	$9.43	$5.03	-$4.40	$8.47	$5.20	-$3.27
22	$9.30	$5.62	-$3.68	$8.20	$4.85	-$3.35	$10.08	$5.59	-$4.49	$9.23	$5.52	-$3.70
23	$9.81	$5.82	-$3.99	$8.41	$5.21	-$3.20	$10.49	$5.80	-$4.69	$9.69	$5.74	-$3.95
24	$10.11	$6.32	-$3.79	$8.52	$5.32	-$3.21	$10.81	$6.45	-$4.36	$9.97	$6.19	-$3.77
25	$10.49	$6.56	-$3.93	$8.53	$5.78	-$2.75	$11.26	$7.01	-$4.25	$10.30	$6.48	-$3.82
26	$10.88	$6.98	-$3.90	$9.05	$5.61	-$3.44	$11.52	$7.01	-$4.52	$10.70	$6.80	-$3.90
27	$11.46	$7.26	-$4.21	$9.44	$5.63	-$3.82	$11.96	$6.81	-$5.15	$11.25	$7.03	-$4.22
Ave. Wage Rate, Ages 16-27	$8.81	$5.61	-$3.20	$7.73	$4.92	-$2.81	$9.26	$5.62	-$3.64	$8.71	$5.52	-$3.18
Ann. % Growth, Ages 16-27	*7.2%*	*5.3%*	*-1.9%*	*4.9%*	*3.6%*	*-1.2%*	*8.1%*	*5.3%*	*-2.8%*	*7.0%*	*5.1%*	*-1.9%*
Ann. % Growth, Ages 24-27	*4.6%*	*4.6%*	*0.0%*	*3.2%*	*1.4%*	*-1.8%*	*3.2%*	*2.1%*	*-1.1%*	*4.4%*	*4.1%*	*-0.3%*

Table 4: (Cont.)

Panel B: Young Women

	Whites			Blacks			Hispanics			All Groups		
Age	*1968 NLS-YW Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]	*1968 NLS-YW Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]	*1968 NLS-YW Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]	*1968 NLS-YW Coh.*	*1979 NLS-Y Coh.*	*Diff.*[1]
16	$3.84	$3.60	-$0.24	$3.68	$4.35	$0.67	$4.59	$4.06	-$0.53	$3.85	$3.68	-$0.17
17	$4.33	$3.79	-$0.54	$4.26	$3.93	-$0.32	$3.99	$3.80	-$0.19	$4.31	$3.80	-$0.50
18	$4.75	$3.87	-$0.88	$4.89	$3.71	-$1.18	$5.45	$3.92	-$1.54	$4.79	$3.85	-$0.93
19	$5.51	$4.00	-$1.52	$4.98	$3.94	-$1.03	$5.02	$4.00	-$1.01	$5.44	$3.99	-$1.45
20	$6.09	$4.13	-$1.96	$5.42	$3.97	-$1.45	$5.57	$4.18	-$1.39	$6.00	$4.11	-$1.88
21	$6.58	$4.32	-$2.26	$6.00	$4.00	-$2.00	$6.26	$4.25	-$2.01	$6.50	$4.28	-$2.22
22	$7.16	$4.64	-$2.52	$6.32	$4.19	-$2.13	$6.27	$4.57	-$1.71	$7.04	$4.59	-$2.45
23	$7.43	$5.22	-$2.21	$6.35	$4.36	-$1.99	$5.47	$5.19	-$0.29	$7.21	$5.12	-$2.10
24	$7.50	$5.50	-$2.00	$6.82	$4.54	-$2.27	$7.94	$5.28	-$2.65	$7.44	$5.38	-$2.07
25	$7.55	$5.79	-$1.75	$5.87	$4.57	-$1.30	$5.92	$5.54	-$0.39	$7.29	$5.63	-$1.66
26	$7.88	$5.91	-$1.97	$5.96	$4.82	-$1.13	$5.63	$6.01	$0.38	$7.54	$5.78	-$1.76
27	$8.49	$6.10	-$2.38	$6.03	$4.88	-$1.15	$5.79	$6.53	$0.74	$8.08	$5.96	-$2.11
Ave. Wage Rate, Ages 16-27	$6.05	$4.80	-$1.26	$5.41	$4.32	-$1.09	$5.54	$4.84	-$0.70	$5.96	$4.74	-$1.22
Ann. % Growth, Ages 16-27	*6.9%*	*4.9%*	*-1.95%*	*4.4%*	*2.4%*	*-2.01%*	*3.7%*	*5.0%*	*1.30%*	*6.5%*	*4.6%*	*-1.83%*
Ann. % Growth, Ages 24-27	*2.3%*	*2.9%*	*0.65%*	*-2.5%*	*2.9%*	*5.43%*	*-2.1%*	*6.9%*	*9.08%*	*1.4%*	*3.0%*	*1.59%*